

ENCYCLOPEDIA OF EDUCATION AND HUMAN DEVELOPMENT

STEPHEN J. FARENGA
AND DANIEL NESS
EDITORS



**ENCYCLOPEDIA
OF EDUCATION
AND HUMAN
DEVELOPMENT**

**STEPHEN J. FARENGA
AND DANIEL NESS
EDITORS**

FOREWORD BY JAMES H. BORLAND

M.E. Sharpe
Armonk, New York
London, England

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80 Business Park Drive, Armonk, New York 10504.

Library of Congress Cataloging-in-Publication Data

Encyclopedia of education and human development / Stephen J. Farenga and Daniel Ness, editors.

p. cm.

Includes bibliographical references and index.

ISBN 0-7656-1268-2 (hardcover : alk. paper)

1. Education—Encyclopedias. 2. Educational psychology—Encyclopedias. I. Farenga, Stephen J., 1958–
II. Ness, Daniel, 1966–

LB15.E473 2005

370'.3—dc22

004030349

Printed in the United States of America

The paper used in this publication meets the minimum requirements of
American National Standard for Information Sciences
Permanence of Paper for Printed Library Materials,
ANSI Z 39.48-1984.



MV (c) 10 9 8 7 6 5 4 3 2 1

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Dedicated to our students

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FOREWORD

The publication of the *Encyclopedia of Education and Human Development* is a significant event in the field of education, and a most impressive one as well. Its significance derives from the fact that gathered between these covers is probably the most comprehensive compendium of writings about education, and the disciplines on which it depends, ever assembled. The sheer volume of information, ideas, theories, practices, and so forth is not only staggering but of obvious and indisputable utility. This volume may not contain everything one needs to know about education at this time and in this place, but it comes closer to anything of which I am aware, or, frankly, anything I can imagine. The old cliché to the effect that “this book belongs on the bookshelf of anyone seriously interested in [insert subject here]” is clearly true when one inserts “American education in the early twenty-first century” in the brackets.

As to what makes the *Encyclopedia of Education and Human Development* impressive, there is, first, the comprehensiveness mentioned above. To attempt not only to identify what the editors refer to as “the complete list,” an exhaustive array of topics covering everything that is important in education and human development, but also actually to compile a book containing chapters dealing with each of those topics would seem to be hubristic—except for the fact that Stephen J. Farenga and Daniel Ness have managed to do it. What a post-postmodern thing to do! Ambition on this level is rare these days, and, seeing something done on this scale makes clear what we have lost by lowering our expectations and meekly staying within the bounds of the practical, or even the practicable.

The first five sections, as the editors explain and the Table of Contents shows, contain twenty-nine chapters, each with its own editor and numerous subchapters. That this wealth of ideas has been made available to educators is, in every sense of the word, a huge accomplishment. But then there is Section VI,

which consists of “a thorough gloss of more than twenty of the most eminent figures in education and human development.” Not only is this a valuable source of information about these seminal thinkers and their ideas, it is the basis for the sort of arguments that are always sparked by lists of the however many top whoevers in whatever field. Excuse me for being insufficiently solemn, but what fun! I think the editors are being a bit provocative here, and bless them for it. Section VII recognizes the socio-political nature of American education by offering information about nineteen organizations that have played significant roles in attempting to foster student and teacher development. Again there is fertile ground for debate over which organizations are included (TEAC?) and excluded (the NEA? AFT?), enough to keep educators not only reading but arguing for some time.

The point is that this is an undertaking of breathtaking ambition and scope, and the very fact that it exists is little short of astonishing. But unlike Dr. Johnson’s sexist and inaccurate judgment of women preachers—“Sir, a woman’s preaching is like a dog’s walking on his hind legs. It is not done well; but you are surprised to find it done at all”—one’s judgment of this volume is that it is not only remarkable for existing but for being of such outstanding quality. Admittedly, Professors Farenga and Ness had a bit of help. The list of contributors is striking for its breadth and the sheer volume of expertise it represents.

In short, this is a magisterial work, an indispensable volume that fulfills the grand ambitions of its editors. The term “encyclopedia” seems, these days, to be applied to any miscellany, any omnium gatherum, however slight. The *Encyclopedia of Education and Human Development*, however, fully deserves the designation “encyclopedia.” “Library” is almost not too grandiose a term.

James H. Borland
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ACKNOWLEDGMENTS

I wish to acknowledge my co-editor, Daniel Ness. The synergy produced through our collaboration is really what made this project possible. I would also like to extend my appreciation to my family, Mark, Patrisha, and Jim Borland from Teachers College, Columbia University, who has served as a pinnacle of inspiration for me in my endeavors as an educational researcher.

S. J. Farenga

I wish to acknowledge my co-editor, Steve Farenga. Without him, this project would truly have been an arduous undertaking. I would also like to thank Susan Lin, Ming-hsiung Lin, Chia-ling Lin, Eric Ness, and Immanuel Ness, as well as Bruce Vogeli, Joe Hankin, and Herb Ginsburg from Teachers College, Columbia University, who have all had a profound influence on me with regard to academic research and the pursuit of knowledge.

D. Ness

We both wish to acknowledge the guidance of the members of our advisory board, namely, David Beacom from the National Science Teachers Association in Washington, DC; Linda Catelli from Dowling College in Oakdale, New York; Marie Danziger from Harvard University; Alan Lockwood from the University of Wisconsin at Madison; Gary Natriello from Teachers College, Columbia University; and R. Murray Thomas from the University of California at Santa Barbara. We thank Beverly Joyce from Dowling College, who provided a great deal of editorial support in the early stages of the project. Finally, we would like to acknowledge the editorial and managerial assistance provided by M.E. Sharpe. Their copyeditors deserve high commendation for their conscientious readings of the manuscripts. We would also like to thank Todd Hallman, Cathy Prisco, Jennifer Morettini, and Jim Ciment for their guidance in seeing this project through from beginning to end.

INTRODUCTION

Now, perhaps more than at any time in history, the subject of education has become an increasingly vital and even fashionable topic on numerous fronts—in politics, among researchers (whose disciplines include education as well as the liberal arts and sciences), parents and families, and among the general public. Moreover, educational institutions, both national and international, have been undergoing constant transformation in terms of assessment, instruction, curriculum, and institutional accreditation. Given the overwhelming spotlight on education in all forms of media and as a center of discussion among the general public, we provide here an authoritative text that considers issues and events in education, human development, and learning. It is therefore our pleasure to introduce you to the *Encyclopedia of Education and Human Development*.

From time to time, a reference work focusing on a particular topic related to the field of education is found. Some topics that come to mind include those in particular content areas (e.g., science and mathematics), group levels (e.g., early childhood, middle school education, higher education), and even psychology-related issues (e.g., cognitive studies, school psychology, development psychology). Furthermore, publications on general educational topics abound. For example, there are a number of handbooks on specific issues in education (e.g., multiculturalism, law, gender, social class) and content areas (e.g., mathematics, reading, science) and even developmental and educational issues in psychology and education.

During the past five or six decades, references in the field of education, for the most part, took the form of dictionaries. Some familiar dictionaries on terms and phrases in education of the 1970s and 1980s are those by Carter Good (1973), Gene Hawes (1982), P. J. Hills (1982), and Derek Rowntree (1982). Within the last few years, we have seen a few more refer-

ences in the form of dictionaries or sourcebooks, for example, a dictionary by John Collins and Nancy O'Brien and a sourcebook by Melvyn Freed, Robert Hess, and Joseph Ryan. But to our knowledge, this work is perhaps the only comprehensive set of volumes that covers a broad range of topics within the fields of education and human development.

We found the compilation of the numerous topics in education to be challenging. First, it was difficult to arrive at a consensus among educational experts as to what “the complete list” of topics in education and human development really is. To be sure, there is no complete list, and even if there were one, disparity would exist among specialists as to the categorization and inclusion of topics. And second, it was no easy task to identify experts with extensive background knowledge whose prose would appeal to large audiences. In addition, publications in this genre appear to be guided by a formulaic process in an effort to create uniformity in works with multiple authors. When this occurs, the reader may often recognize homogeneity in form, content, and tone for the entire work. Unfortunately, in this case, some of the unique expertise of the authors is lost. In this work, we preferred to limit homogenizing the words of the authors, allowing their individuality, experience, context and expertise from their specialized fields to reach the reader. We have been quite fortunate to find chapter and entry authors whose backgrounds are broad in scope and extend well beyond the boundaries of distinct disciplines or professional areas.

Before we discuss the content of the encyclopedia and the breakdown of topics into five broad categories (discussed below), we turn to two general concerns that have greatly influenced the field of education. The first is the role of politics and governance. And the second concern has to do with the impact of knowledge, that is, how humans come to

know things. Incidentally, the two issues of governance and knowledge, along with the problem of conduct, are of fundamental importance to the discipline of philosophy.

EDUCATION AND POLITICS

For the most part, the general public—teachers and parents included—putatively think of education as a societal good whereby children and adolescents are taught the so-called common discipline subjects (i.e., language arts, mathematics, social studies/history, science, and fine/visual arts) as a means of preparation for the workforce. With the accuracy of this belief aside, this is only one piece of the large education puzzle. Clearly, the institution and idea of education is much more than simply having twenty-five or so students in a classroom for seven hours a day, five days a week, 180 days a year. More specifically, what (or who) are the driving forces behind the institution of education? How were they created and developed? And whose interests are being served? If not those of the students, then whose? Based on relevant research, the *Encyclopedia of Education and Human Development* attempts to answer these challenging questions.

Education is politically driven. This should be quite clear when considering how teachers have been taught, how standards in various areas have been created and implemented, and why students are expected to use particular kinds of textbooks as opposed to others. Moreover, “educational reform” is a catch term in today’s media. What is educational reform? Were there educational reform movements eighty years ago? Twenty years ago? Ten years ago? How do the educational reform efforts of the 1920s or 1990s differ from present reform efforts? Educational reform is a politically charged term in that we hear arguments as to its meaning taken by different sides.

Political agendas in education have been often associated with the escalating “standards” movement, which has often ignored the interests of the students, and instead served those of its designers and supporters. The adherence to educational standards sounds beneficial in that we might often believe that their use provides structure and coherence when students are engaged in learning subject matter. But does the use of standards in education really reflect struc-

ture and coherence in particular content areas? A number of educational researchers and practitioners would argue that this is not the case at all. To begin with, there is little, if any, evidence to support the benefits of standards in any field or discipline. Although the designers of the standards have referenced studies in support of standards, works that have been cited often lack empirical evidence and are mostly anecdotal.

The institution of education has also been influenced by political agendas with regard to curriculum development. This influence can be examined through the textbook industry. Once again, we might take for granted the benefits of textbook use in schools. On the surface, one common misconception is that textbooks generally aid in organizing students’ knowledge in a particular subject area. Although this may be true in certain cases, textbook publishers have high stakes in the education industry. They tailor the content of the textbook not necessarily to foster cognitive skills, but often to court state education officials. In addition, these reforms change over time, and are based on the political penchants of the officials in power. So, for example, in the state of California, mathematics textbook series in the 1990s mostly focused on problem solving skills, concept development, and mathematical meaning. However, by 1999, the state education department favored a much more conservative position and advised textbook publishers to change the mathematics content to adhere to a more skill and drill curriculum. So, the use of a particular curriculum in education depends on the swing of the political pendulum.

We have invited experts in nearly all academic and professional arenas to write full-length chapters or entries on topics that impact the fields of education and human development. In addition to well-known scholars in education, we have invited authors in the fields of psychology, philosophy, sociology, history, mathematics, musicology, visual arts, and even law and medicine to share their insight in ways that elaborate on contemporary issues in education and human development.

EDUCATION AND KNOWLEDGE

As schooling plays multifarious roles in society, another primary purpose of education is, for the most

part, one based on knowledge development. If this is the case, then different groups of individuals will have different opinions about the importance of knowledge and cognition. Some will hold that knowledge develops the moral character of the individual, while others will say that the main reason for developing knowledge is perhaps more practical or mundane—to prepare youth for professional careers and the workforce. Or, that bestowing knowledge on students is important in that it will prepare students for college or the university. Whatever the reason might be, one will find in the *Encyclopedia of Education and Human Development* several chapters that deal with the topics of knowledge and cognitive development from a variety of perspectives. These include those from cognitive science, developmental psychology, and the psychomotor domains.

In general, there are at least two philosophical strands that have contributed to the meaning of knowledge, as well as how knowledge is to be imparted in an educational setting. The first is the view that society shapes and provides knowledge for the individual. This is often referred to as the materialist position put forth by the preeminent seventeenth-century philosopher John Locke. Well-known twentieth-century thinkers who were influenced by the Lockean perspective include the American behavioral psychologists Edward L. Thorndike and William Kilpatrick, and later Burrhus Frederick (B.F.) Skinner, and the Canadian social learning theorist Albert Bandura. The other argument takes the position that humans are generally born with virtue, and it is society that can either enhance or corrupt young children with regard to their intellectual and cognitive development. This position was held by the eighteenth-century philosopher Jean-Jacques Rousseau, and had a major influence on contemporary theories of cognitive development, particularly those of the twentieth-century developmental psychologists Heinz Werner of Germany and Jean Piaget of Switzerland, and the well-known physician and educator Maria Montessori from Italy. In the present day, there is a good deal of overlap between both philosophical strands among most cognitive scientists and psychologists. To be sure, post-Piagetian researchers today have countered Piaget's position on the origin and emergence of particular cognitive skills. For example, the researcher Rene Baillargeon has shown that human knowledge begins from birth—much earlier than Piaget had con-

cluded decades earlier. So, our understanding of knowledge and the possibilities of human cognition in general are always being modified with the development of new evidence.

We can conclude, then, that the construct of knowledge is a sine qua non factor in the educational enterprise. Without it, schools would be merely holding places for youth, lacking any type of environment for intellectual development. And perhaps more important, schools would not be in the business of preparing youth with the skills for the workforce or for furthering formal education.

HOW TO USE THIS ENCYCLOPEDIA

The *Encyclopedia of Education and Human Development* is divided into seven sections. The first five sections consist of twenty-nine chapters with anywhere from three to twelve entries in each. Each of the five sections deals with a specific area in the fields of education and human development. Section I is entitled “Constructs of Learning” and has to do with the necessary tools of education and human development—namely curriculum, instruction, and assessment. This section also discusses issues regarding specific subject matter knowledge, informal learning, and educational technologies. The authors of Section II—“Philosophical, Social, and Political Issues in Education”—examine education from its philosophical foundations as well as its social, political, and institutional influences that may influence educational policy. This section also includes chapters on moral education, at-risk issues, and motivation. Section III—“Levels in Educational Practice”—is unique in that readers will find the historical underpinnings and general policy practices associated with all of the conventional student group levels. These levels include early childhood, childhood (i.e., elementary), middle school, adolescent (i.e., high school), and higher education. The topic of higher education is divided into two chapters, one focusing on adult educational development and the second focusing on contemporary issues.

How do we determine the emergence of certain cognitive skills during the course of physical and intellectual development? Section IV—“Physical, Motor, and Cognitive Domains”—deals with this

question by focusing on specific issues with regard to physical, motor, language, quantitative, and spatial development. We begin with a thorough overview of physical and psychomotor development in the chapter entitled “The Psychomotor Domains.” We continue with a chapter on language development, followed by a discussion on the principles of semiotics in education. This section concludes with a chapter on the development of quantitative and spatial thinking.

Section V—“Educational Issues Concerning Diverse Populations”—examines diverse populations and how individuals of different backgrounds are prepared to assume their roles within society. The first chapter in this section deals with the diversity of learners with regard to ability levels. The next chapter focuses primarily on students with severe learning disabilities and ways in which institutions of education can foster conducive environments for these individuals. The chapter that follows examines medical and psychiatric concerns, which can have major effects on educational (as well as physical and social) development. The final chapter discusses the role of the parent and family with regard to the educational development of the child.

Section VI is a thorough glossary of more than twenty of the most eminent figures in education and human development, each selected as a result of numerous surveys we conducted with colleagues in the field of education. We asked each professional to name five “important” people in education and human development who have made outstanding contributions in the field. As the editors, we are fully aware that there are numerous important individuals in the field of education who may not be included in this section, though every attempt was made to include those individuals who had the greatest impact.

Section VII consists of nineteen well-known organizations that have played significant roles in attempting to foster student and teacher development. We have categorized these organizations according to the following five primary domains: (1) Subject Matter; (2) Child Related; (3) Teacher Related; (4) Educational Testing; and (5) Certification-Accreditation. As the editors, we understand that there may be a number of educational organizations that are not included. It is possible that those not included have similar missions to those you will find in Section VII. Again, every attempt was made to be as inclusive as possible within the designated length constraints.

It is our sincerest hope that you come away from the encyclopedia with a greater knowledge in a particular area of education and human development. We also hope that readers of all levels of expertise use this work for their own benefit—whether for pre- or in-service teachers, college or graduate students, college or university faculty, or anyone interested in the contemporary issues in the field.

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I

CONSTRUCTS OF LEARNING

CURRICULUM

In most faculties of education, research is focused on teaching or, as many prefer, “instruction.” The dominant interest is in learning *how* to teach more effectively, so that students can learn more quickly, as measured on standardized examinations. Such educational research is a form of social and behavioral science. While hardly disinterested in questions of pedagogy, the interdisciplinary field of curriculum studies attends to *what* knowledge is worth knowing. More influenced by scholarship in the humanities and the arts than by research in the social and behavioral sciences, the field studies the cultural, historical, and political questions that surround and inform the curriculum question: What knowledge is of most worth?

Traditionally, the field construed the problems of curriculum and teaching as “technical” problems, that is, problems of “how to,” of protocol. The contemporary field of curriculum studies regards the problems of curriculum and teaching as “why” problems. Such a view requires that we understand what was before considered only a problem to be solved (see Pinar et al. 1995). The methodological tools used to study these problems are provided, in the main, by the humanities and the arts, although social theory has been influential as well.

The study of curriculum can be organized into several scholarly discourses; among these the most important is the study of curriculum history. This has been a rapid and recent development. As the distinguished curriculum historian Herbert Kliebard (1992) observes in his *Forging the American Curriculum*, “When I was a graduate student there was no such thing as a curriculum historian.” Kliebard (1970, 1986), Daniel and Laurel Tanner (1990), Ivor Goodson (1983, 1984, 1988a, 1988b, 1989a, 1989b), Barry Franklin (1986), Doug McKnight (2003) Steven Selden (1988), and Craig Kridel (1989, 1991; see also Kridel and Newman 2003) are among

those whose scholarship has made history key in the contemporary field.

The traditional field was ahistorical (Kliebard 1970). Curriculum development itself was conceptualized according to protocol and orientation, often influenced by a scientific faith that the best was yet to come; that is, that more effective knowledge awaited more refined and rigorous scientific experimentation. The administrative or managerial character of the field’s origins cannot be overemphasized in this regard. There is no better example of this character than the Tyler Rationale (Tyler 1949).

“If any single volume deserves to be called the bible of curriculum making,” Philip Jackson observed, “it is certainly Ralph Tyler’s *Basic Principles of Curriculum and Instruction*. . . . A more influential text within the field of curriculum would be hard to name” (1992, 24). This thin book, which began as a syllabus for a course Tyler taught at the University of Chicago in the 1930s and 1940s (and published by the University of Chicago Press, first in 1949), “attempts to explain a rationale for viewing, analyzing, and interpreting the curriculum and instructional program of an educational institution” (Tyler 1949, 1). Tyler goes on to say that the book “outlines one way of viewing an instructional program as a functioning instrument of education” (p. 1). The heart of Tyler’s basic principles consists of four questions (to which he devotes separate chapters), which as Jackson points out, “a goodly number of today’s curriculum specialists, thanks to Tyler, probably know by heart” (Jackson 1992, 25). These four questions are:

1. What educational purposes should the school seek to attain? [Objectives]
2. What educational experiences can be provided that are likely to attain these purposes? [Design]

3. How can these educational experiences be effectively organized? [Scope and Sequence]
4. How can we determine whether these purposes are being attained? [Evaluation] (Tyler 1949; see Jackson 1992, 25)

Criticism of the Tyler Rationale was voluminous and, finally, decisive (see Jackson 1992; Pinar et al. 1995), except in the public schools, where versions of it remain in wide circulation.

In curriculum studies there has been, over the past thirty years, (1) a shift from focus on social engineering and the business model to the project of understanding, which involves the concept of curriculum as conversation; (2) the establishment of an intellectually independent—that is to say, not tied to specific pieces of legislation (such as the *No Child Left Behind Act* of 2001)—and academic field dedicated to understanding, and based primarily on research and theory in the humanities and the arts, not upon the social and behavior sciences; and (3) a shift from the emphasis on teaching (especially the technology of instruction) to curriculum, especially interdisciplinary configurations such as African American studies, women's and gender studies, and cultural studies (Pinar 2004).

In addition to the study of curriculum (however broad and complicated its definition) and its explicit interest in the school as institution (the sphere of “practice”), what is distinctive about contemporary curriculum studies is that it is the only area in the broader field of education in which the humanities and the arts, rather than the social and behavioral sciences, are influential. Indeed, much research conducted in the contemporary curriculum field can be characterized as theoretical, as that adjective is understood in the humanities and the arts (Pinar 2004).

Complementing historical studies, theory enables scholars to understand the present relations among culture, society, and politics in the structuring of school curriculum and curriculum research. Like the humanities and the arts, the academic field of curriculum studies is embedded in national culture, a fact underscored in the first international handbook of curriculum research (Pinar 2003). Because school curriculum and curriculum research are embedded in their respective national cultures, in the political present (a different present in different nations and regions), in cultural questions represented in vari-

ous curricula as well as in curriculum research, and in those public debates and policies surrounding those curricula and research, studying the academic field of curriculum studies locally and globally (as each is embedded in the other) enables scholars to strengthen their critical and intellectual distance from their respective cultures and from those processes of cultural standardization and economic exploitation threatened by the phenomenon of globalization.

The interdisciplinary field of curriculum studies is, then, committed to the study of educational experience, especially (but not only) as that experience is encoded in the school curriculum, itself a highly symbolic as well as institutional structuring of educational experience. As Madeleine R. Grumet (1988) has suggested, curriculum is what the older generation chooses to tell the younger generations. The school curriculum communicates what we choose to remember about our past, what we believe about the present, what we hope for the future. Curriculum debates—such as those over multiculturalism and the canon—are also debates about the American national identity (Castenell and Pinar 1993; Morris 2001, Doll 2000).

Because curriculum is highly symbolic, the study of curriculum requires situating it historically, socially, and subjectively (that is, in terms of life history and self-formation). Sectors of curriculum scholarship and research include efforts to understand curriculum racially, politically, theologically, autobiographically, and historically, in terms of gender, popular culture, phenomenology, postmodernism, poststructuralism, psychoanalysis, and the arts, all situated locally and in “the global village” (see Pinar et al. 1995). In this chapter I will summarize historical, political, racial, gendered, institutional, and international research. (For a comprehensive treatment of curriculum studies, see Pinar et al. 1995; Marshall, Sears, and Schubert 2000; Pinar 2003; Pinar 2004.)

Acknowledgement: My thanks to William M. Reynolds for his assistance in the entry on historical scholarship, to Patrick Slattery for his assistance in the entry on institutionalization and internationalization, and to Peter M. Taubman for his assistance in the entry on gender scholarship. My thanks, too, to Chris Myers for permission to adapt material from *Understanding Curriculum* for use in this essay.

William F. Pinar

CURRICULUM HISTORY

To study curriculum comprehensively it is essential to portray its development historically. The ahistorical posture of the traditional field meant that “curriculum [has been] practiced with urgency in a crisis atmosphere that excludes contemplation of its evolution” (Hazlett 1979, 131). For instance, in the current wave of school reform, collaborative and small-group work is promoted with a naive enthusiasm, without realizing it is not exactly novel (see, for instance, Miel 1952). Traditional curriculum studies—in the past too often a support system for the school bureaucracy—was complicit in this capitulation to the “reform” *du jour*. As distinguished curriculum historian Herbert Kliebard (1970) made clear, the ahistorical and atheoretical character of traditional curriculum studies disabled teachers from understanding the history of their present circumstances.

Many scholars locate the birth of curriculum as a field of study in 1918 with the publication of Franklin Bobbitt’s *The Curriculum* (Kliebard 1986; Giroux, Penna, and Pinar 1981; Jackson 1992). Bobbitt argued for the reform of existing curricula modeled after what were then contemporary scientific notions of organization and measurement. However, his book crystallized a field that had been developing for many years. The scientific movement in curriculum, and in education generally, was responding to the earlier dominance of faculty psychology (in which the mind was regarded as a muscle to be exercised by memorization and recitation). Charles W. Eliot (1834–1926), president of Harvard University, was among the most visible scholars associated with the curricular ascendancy of faculty psychology. Faculty psychology was succinctly expressed in two documents, the Committee of Ten on Secondary School Studies (1893) and the Committee of Fifteen on Elementary Education (1895) (see Kliebard 1986). Some locate the birth of the field with the publications of these statements. Others choose 1923 and the Denver curriculum revision project: “According to Cremin, if the curriculum field had a beginning it was at Denver” (Tanner and Tanner 1990, 197).

British scholars tend to choose European origins. For instance, in his study of *Curriculum History*, David Hamilton (1990, 36) locates the contempo-

rary field in the historical shift from absolutism to the Enlightenment:

Overall, the transition from the age of absolutism to the age of Enlightenment was marked, in curriculum terms, by four processes. First, continuous attention was given to the search for new knowledge. Secondly, repeated attempts were made to develop taxonomies of knowledge (e.g., the taxonomic initiatives of Carl Linnaeus, 1707–1778) that might accommodate such new knowledge. Thirdly, such taxonomic attention led to the fragmentation (or specialization) of knowledge, as in the individual of separate *subjects*. Finally, growing attention to the concept of academic freedom—particularly after the founding of Berlin University in the early years of the nineteenth century—fostered repeated revision in the curricula of schools and universities.

HISTORICAL OVERVIEW OF THE FIELD

Hamilton (1989) chooses two dates as beginning points for the curriculum field: 1582 and 1633. He tells us that these two dates represent the earliest sources for the use of the term “curriculum” in university records. The earliest source of curriculum in the records of the University of Glasgow (Scotland) is 1633; for the University of Leiden (Holland), 1582 (Hamilton 1989, 43). Hamilton continues: “In the Leiden case, for instance, it was used in the form ‘having completed the curriculum of his studies.’ At Glasgow curriculum referred to ‘the entire multi-year course followed by each student, not to any shorter pedagogic unit’” (1989, 45). While acknowledging the persuasiveness of these different British and American arguments, I choose 1828 and the publication of the *Yale Report on the Defense of the Classics* (hereafter known as the *Yale Report*) as a reasonable beginning point for our study of the contemporary American field of curriculum.

Published in 1828, the *Yale Report* communicates clearly the faculty psychology that rationalized the classical curriculum (Sloan 1971). Faculty psychology was characterized by an emphasis on Greek and Latin as school subjects, and by an emphasis on memorization and recitation as instructional methods. David Hamilton (1989) notes that a “diversity of pedagogical thinking . . . suffused the recitation

label” (p. 139). Versions of both faculty psychology and the classical curriculum are discernible in contemporary curriculum debates nearly two hundred years later (see Pinar 2004).

In 1860 Spencer published his famous essay “What Knowledge is of Most Worth?” in the United States. Spencer insisted “the only purpose of education was to prepare for complete living.” His classification of life activities, in order of their importance, are as follows: (1) those ministering directly to survival; (2) those securing the necessities of life, contributing indirectly to self-preservation; (3) those which support the rearing and discipline of offspring; (4) those which support one’s social and political relations; and (5) those which comprise leisure time, satisfying tastes and feelings (Tanner and Tanner 1990; Hamilton 1990, 38). Spencer insisted that children “should be *told* as little as possible and induced to *discover* as much as possible” (Spencer 1860, 124–125).

What was Spencer’s significance? David Hamilton (1990, 38) tells us that three consequences followed. First, after Spencer came the notion that curriculum represented a selection from available knowledge. Second, curriculum was to be determined by reference to secular rather than spiritual purposes. Finally, through the construction and delivery of curriculum, the social progress of society can be promoted. Before the Enlightenment, curriculum was assumed to be a spiritual journey; afterward, curriculum denoted a means of social engineering and progress. In the *Yale Report*, we encounter a curriculum rationale based on faculty psychology, “a systematic and detailed psychology theory developed by some of Europe’s outstanding Enlightenment thinkers” (Sloan 1971, 244). (For a critique of Spencer’s significance, see Egan 2002.)

Faculty psychology postulated three constituent faculties or powers. First was the presence of will or volition, that faculty which enables human beings to act. Second were the emotions, those affections and passions that enable human beings to experience pleasure and pain, love and hate. Third was the intellect, or understanding, which enables human beings to reason, to think, to make judgments, and comprehend meanings (Rippa 1988, 198). There is a considerable scholarship on these fundamental notions (Kliebard 1986; Sloan 1971; Spring 1986; Egan 2002).

A “thoughtful, responsible attempt to consider the place of the undergraduate college in the totality of

the American educational scene” (Sloan 1971, 243), the *Yale Report* expresses two key concepts in faculty psychology: discipline and furniture. The aim of education is to expand the powers of the mind and to store it as knowledge. The former of these is perhaps the more important of the two. The primary aim in a curriculum, then, should be to call into daily and vigorous exercise the faculties of the student. The *Yale Report* stated that schools should adopt course content and teaching methods which are most likely to teach the art of focusing the power of attention and directing the train of thought. Curriculum should arrange, in the language of the report, the treasures which memory gathers. Habits of mind, the report continued, are not cultivated hastily; they require lengthy and continuous application. It compared the development of mental powers to those of manual powers. The “muscles” of the mind require the same routinized exercise as do those of the body (Pinar et al. 1995).

Based on faculty psychology, the school curriculum emphasized the classical subjects such as Latin and mathematics. These were to become organized arbitrarily into age-segregated groups, an administrative convenience which later supported elaborate schemes of psychosocial and cognitive development. In a review of curriculum making during the nineteenth century, Harold Rugg noted that instruction was organized around a dozen school subjects; it employed the reading and memorizing of textbooks. Textbooks were encyclopedic compendia of facts to be memorized, by means of which the mind became muscled (Pinar et al. 1995).

During the last decade of the nineteenth century, the National Educational Association (NEA) appointed three committees to make curriculum policy: the Committee of Ten on Secondary School Studies, the Committee of Fifteen on Elementary Education, and the Committee on College Entrance Requirements. Charles W. Eliot was the chairman of the Committee of Ten. These reports cast a mold for the school curriculum out of which it has yet to break free. As Cubberly (1920) observed: “The committees were dominated by subject matter specialists, possessed of a profound faith in mental discipline. No study of pupil abilities, social needs, interests, capacities, or differential training found a place in their deliberations” (p. 543). In his proposal for reform, Eliot recommended a reduction in curricular

time devoted to grammar and arithmetic so that the elementary school program could be diversified. However, the outcome of the committee's deliberations was to afford these subjects even higher priority in the curriculum than they had before. In fact, grammar now topped what had become the official list of important school subjects.

The consequence of the report of the Committee of Fifteen on the elementary curriculum was the solidification of the curricular status quo. Additionally, it is also clear that the report established what would become an important precedent, strengthening the role of subject-matter specialists as curriculum makers. Educational leaders who were opposed to classicism were distressed. For instance, among the Committee of Fifteen, Francis Parker's (the "father" of progressivism) reaction to the report was bitter. In protest, he demanded that a new committee be appointed. His calls went unanswered. Eliot, faculty psychology, and classical curriculum theory had triumphed in nineteenth-century America (Tanner and Tanner 1990). Loud echoes remain today (see Pinar 2004).

G. Stanley Hall (1844–1924) occupied a transitional place between classical curriculum theory and the Progressive movement of the 1920s and 1930s. Like Parker, Hall regarded child study as a means of educational reform. Also like Parker, Hall borrowed from evolutionary theory and its misapplication to curriculum theory, agreeing at one point that "ontogeny recapitulates phylogeny" (Cremin 1964, 104). Partly for this reason Hall became known as "the Darwin of the mind" (Hall 1923, 357–360). In 1883 he founded the first psychological laboratory in the United States, at Johns Hopkins University. In 1887 he launched the *American Journal of Psychology*, the first such journal in the United States. Like many in his generation, Hall envisioned the coming of a new era in which the intellectual elite—especially social scientists like himself—would design a better social world. The leadership position he imagined for academicians generally, and for psychologists more narrowly, would replace that of church leaders. (For a gendered and racialized critique of Hall's theories, see Bederman 1995.)

As the first decade of the twentieth century closed, faculty psychology fell victim to a triumphant experimental psychology. While Hall was instrumental in early skirmishes between the two forms of psy-

chology, it was Edward L. Thorndike (1874–1949) who is most identified with the ascendancy of experimental psychology in education. Thorndike was a student of William James. Like James, he discredited faculty psychology and mental discipline. James's experiments had failed to show any improvement in the faculty of memory as a result of memorization. Clearly, if memory could not be improved by memorizing it could hardly be rationalized as a major curriculum component (Kliebard 1986).

Thorndike continued James's attack on faculty psychology and promoted an experimental science of psychology no longer tied to philosophy (on which point he broke with his mentor). Thorndike found that no one discipline (be it Latin, Greek, mathematics, or any other subject) was more likely than any other discipline to develop the mind. Rather than a matter of mental discipline, learning was subject, even task specific (Tanner and Tanner 1990). To "prove" these views, the new science would adopt the research methods of the physical sciences, and thereby satisfy the demands of objectivity and verifiability. Education itself must be scientific as well, grounded in the foundation provided by the physical, biological, and social sciences, especially psychology. Thorndike promulgated these fundamental notions successfully from his position at what was then (and would remain for more than half a century) the nation's leading center for research and graduate training in education, Teachers College, Columbia University. Thorndike had joined the Teachers College faculty in 1889, and remained there for the duration of his career (Pinar et al. 1995).

Thorndike's major opus was *Educational Psychology*, published in 1913 (Rippa 1988). It would influence the field for decades to come. In direct opposition to the mental disciplinarians, Thorndike advocated a stimulus-response behavioral psychology. He believed that scientific knowledge of stimulus-response behavioral patterns would enable educators to alter human behavior so that it would come closer to coinciding to humankind's fundamental aspirations: "It is a first principle of education—to utilize any individual's original nature as a means of changing him for the better—to produce in him the information, habits, powers, interests, and ideals which are desirable" (Thorndike, quoted in Rippa 1988, 200). In prophetic words, Thorndike continued: "Education is a form of human engineering, and

it will profit by measurements of human nature and achievement as mechanical and electrical engineering have profited by using the foot, pound, calorie, volt, and ampere” (Thorndike 1922, 1). By reducing each human action to its smallest unit, that of stimulus and response, Thorndike and later John B. Watson (Watson et al. 1917), another major behaviorist, sought to establish the principles of human behavior that would permit its prediction (see also Cohen 1979). (For critiques of the historic role played by educational psychology in the study of curriculum, see Huebner 1999; Egan 2002; Pinar 2004.)

If Edward Thorndike provided the psychological legitimization for the social-efficiency movement, Frederick Winslow Taylor (1856–1915) provided methodological guidance via his theory of scientific management. Taylor had devised this theory early in the twentieth century. It was predicated upon economic practice, more specifically the structure of the workplace. Labor had evolved from a nineteenth-century emphasis upon craft guilds, an economic structure that required a master craftsman who taught apprentices his knowledge of the total production process. By the twentieth century this structure was rapidly disappearing, replaced by large factories wherein labor was specialized and routinized. Accompanying such a division of labor was a call for “scientific” management to supervise and control the various divisions. In this new era of mass production, effectiveness and efficiency were paramount. Scientific management asserted it could guarantee them (Pinar et al. 1995).

Essential to scientific management was the specification of the task to be performed. In his major work, *Principles of Scientific Management* (1911), Taylor characterized the “task idea” as the “the most prominent single element in modern scientific management.” Social efficiency experts viewed their work as a “mission” (Kliebard 1986). Rather than viewing curriculum as an opportunity to develop mental discipline, as “windows of the soul,” or as organized around the needs, interests, and abilities of the child, curriculum became the assembly line by which economically and socially useful citizens would be produced. Social utility, for these reformists, became the sole value by which the curriculum would be judged (Kliebard 1986).

What was meant by efficiency? Certainly, discipline and hard work were meant. As well, the idea

suggested notions of increased productivity and profits which mass production made possible. The idea of harmonious human relationships as necessary for the smooth functioning of the workplace was also included (Franklin 1986), an idea emphasized even more during the 1980s when the corporation rather than the factory became the model for school reform (Fiske 1991; Pinar 1994).

THE DEVELOPMENT OF THE FIELD OF CURRICULUM

John Franklin Bobbitt’s (1875–1956) *The Curriculum* (1918) is widely cited as the formal date of genesis of the curriculum field (Giroux, Penna, and Pinar 1981; Tanner and Tanner 1980; Schubert 1980, 1986; Kliebard 1986; Franklin 1986). Prior to the publication of *The Curriculum*, Bobbitt focused on ways to increase the efficiency of the school. In a 1912 article published in the *Elementary School Teacher*, entitled “The Elimination of Waste in Education,” Bobbitt decried the fact that the typical school plant was used only 50 percent of the time. To increase efficiency and economy, Bobbitt advocated that schools should be kept open Saturdays, Sundays, and summers.

Werret W. Charters’s (1875–1952) *Curriculum Construction* (1923) represents a major statement of the social efficiency orientation. Charters was not an administrator like Bobbitt. Rather, he was a teacher educator who had studied under Dewey in Chicago and who later claimed that Dewey had influenced him considerably (Seguel 1966). (Dewey, however, expressed reservations regarding Charters’s academic abilities and prospects.) Charters argued that curriculum was comprised of those methods by which objectives are determined. Thus, the content of curriculum is always methodological in nature. Charters’s method of determining the curriculum was activity analysis, a concept he borrowed from scientific management, a method he and his colleagues believed applicable to any curriculum development project.

To illustrate, Charles C. Peters extended Charters’s and Taylor’s notions to curriculum development in Christian education: “We shall need to pick out a hundred, or a thousand best Christians and study their characteristics. We shall need to observe their habits, their ideals, their beliefs, their attitudes, etc., and compare these so as to ascertain what ones are

common to all, or nearly all (and hence essential to Christianity) and what ones are merely accidental or personal” (quoted in Kliebard 1979, 213).

Probably the major reform movement of the first half of the twentieth century is the progressive education movement. Scholars trace the origin of this movement to four main figures: John Mayer Rice, Lester Frank Ward, Jane Addams, and most commonly, John Dewey (Cremin 1964; Seguel 1966; Tanner and Tanner 1980; Schubert 1980, 1986; Kliebard 1982, 1986; Westbrook 1991; Munro 1999). All four exercised influence upon the character of this political and intellectual movement in American education, a movement whose influence on day-to-day classroom practice has always been debated. Progressive education can be said to have been inaugurated in Quincy, Massachusetts, in the late 1870s, with the work of Colonel Francis Parker. Even during the time of the triumph of faculty psychology and the classical curriculum in the various NEA committees, progressive ideas did circulate nationally. For instance, some superintendents advised teachers to “individualize” their teaching. Highly visible educators such as Nicholas Murray Butler of Columbia and Charles De Garmo of Swarthmore endorsed child-centered curriculum reforms. Despite an apparent popularity of the progressive educational ideas with many teachers and their endorsement by renowned educators, traditional conceptions of education, that is, classical curriculum theory with its profound faith in mental discipline, maintained their grip on the vast majority, especially school superintendents and school board members during the nineteenth century (see Tanner and Tanner 1990, 104).

John Dewey’s (1859–1952) contribution to educational and curricular thought (1900, 1902, 1910, 1916, 1934a, 1934b, 1938) is incalculable. His influence is discernible in those who espouse his views as well as those who oppose them. Dewey entered the curricular debates at the turn of the century with a thin book that is one of his more accessible writings, *The Child and the Curriculum* (1902). Several scholars assert that in this essay one finds Dewey’s basic statement of curriculum theory (Kliebard 1986; Schubert 1980, 1986; Doll 1993). In this early book, a certain Hegelian influence is discernible in his insistence that the dualism or dichotomy between the child and the curriculum is a false one (Kliebard 1986; see Westbrook 1991). Apparent contradic-

tions, or in Hegelian (and Marxian) terms, thesis and antithesis, can be unified to produce a higher order of reality, or synthesis. Dewey joined others in criticizing the classical curriculum of the nineteenth century. Curriculum, he insisted, must not be an “external annex to the child’s present life” (Dewey 1964, 352–53).

Dewey’s criticism of the classical curriculum was insightful and unrelenting. He argued that the child’s experience must form the basis of the curriculum, and in so doing synthesize the apparent antagonism between the two. Dewey did not advocate freedom without adult guidance. Later, many of those claiming to work progressively would forget Dewey’s insistence that educational activity required careful pedagogical guidance. Dewey (1902) wrote: “Nothing can be developed from nothing; nothing but the crude can be developed out of the crude—and this is what surely happens when we throw the child back upon his achieved self as a finality, and invite him to spin new truths of nature or of conduct out of that” (p. 24). Partly in response to misunderstandings of Dewey’s position on freedom, Harold Rugg and Ann Shumaker would emphasize: “We do not dare leave any longer to chance—to spontaneous, overt symptoms of interest on the part of occasional pupils—the solution of this important and difficult problem of construction of a curriculum for maximum growth” (Rugg and Shumaker 1928, 118).

Some cite another Dewey book as launching the Progressive movement. In *The School and Society* (1900) Dewey asserts that schooling must participate in the reconstruction of society. Specifically, Dewey shared Ward’s view that students ought to discuss, plan, and effect meaningful social change. Schooling which ignored this dimension produced egocentric individuals. This potential for “selfishness” worried Dewey considerably. Dewey proposed the idea of school as community. For Dewey, community denoted students involved in so-called “active occupations,” not a vocational concept. Conducted in democratic and cooperative ways, these activities would revolve around the child’s experience. The child’s experience would be active rather than passive. Communication and ideas would be expressed relatively freely. The concept of school as democratic community might entail a school structured differently from its surrounding community, if the local environs lacked certain democratic qualities. This

possibility marks an important distinction between Dewey and Charters. For the latter, the school should mirror the larger community for which students are being prepared. For Charters, the primary goal of schooling was the production of graduates who would “do well” in the larger society. If that larger society exhibited democratic qualities, then so should the school. If society did not, evidently the school ought not. For Dewey, the ideal of democracy was supreme. It becomes clear that Dewey viewed the solution of social problems as a major focus of the curriculum. The goal of education was to improve society. This goal could not be reached, he insisted, unless the curriculum was constructed around the child.

During his time in Chicago, Dewey worked with Jane Addams (2002; see Munro 1999), a social reformer whose settlement house—Hull House—represented “an experimental bridging of class cultures” (Westbrook 1991, 85). Dewey had lectured at Hull House for several years before his move to Chicago, and when he did relocate was warmly received by the reform community (Westbrook 1991). Jane Addams educational ideas supported Dewey’s educational theories (see Munro 1999). Both Dewey and Addams believed that learning is a continuous and vital process, not preparation for a life to come later. It was Jane Addams who declared that the traditional school was unsuitable for learning because it was disconnected from life (Tanner and Tanner 1990), a view Dewey shared (Addams 2002; Elshtain 2002).

Dewey’s ideas became institutionalized in the University of Chicago Laboratory School. Among the published records concerning the school is *The Dewey School: The Laboratory School of the University of Chicago* (1936). The authors, Katherine Camp Mayhew and Ann Camp Edwards, both teachers at the school, detailed the history and character of the curriculum. Mayhew and Edwards identify two periods in the school’s evolution. The first (1896–1898) was experimental in nature, guided by Deweyan principles of loyalty to the nature of children, “practical” acquaintance with various school subjects, and a concrete experience in the employment of scientific method. The second period (1898–1903) was characterized by revision of the curriculum based on analysis of what proved successful during the first period. The primary aim of the school was to foster “cooperative and mutually helpful living” (Mayhew and Edwards 1936, 39). This phrase, in Deweyan

terms, meant the cultivation of social awareness and a democratic vision (Dewey 1916).

As we have seen, the year 1918 is an important date in curriculum history. Bobbitt’s *The Curriculum* was published, providing theoretical legitimation for an expanding and accelerating social efficiency movement. As well, 1918 saw the publication of the *Cardinal Principles of Secondary Education*, a report met with applause, in contrast to the previous and controversial report issued by the NEA, the Committee of Ten report (1893). (Now it has come under severe criticism for overemphasizing vocational education, not only from historians of the curriculum but also from conservative school reform critics; see Ravitch 2000). Also that year *Teachers College Record* published William Heard Kilpatrick’s (1871–1965) “The Project Method.”

Kilpatrick’s 1918 essay “caused such an immediate sensation that the Teachers College Bureau of Publications was obliged to distribute an astounding 60,000 reprints” (Kliebard 1986, 159). Those critical of the social efficiency movement were worrying with Dewey that it would produce “selfish individualists” (Kilpatrick 1918, 334). Before projects were systematized into a “method” by Kilpatrick in 1918, they had been employed in the Dewey School before the turn of the century and in the Francis W. Parker School as early as 1901 (Tanner and Tanner 1990). According to Kilpatrick, from the standpoint of theory, the concept of activity was methodological. Despite Kilpatrick’s insistence that the project was a method and not a complete curriculum theory, in effect the project method was discussed as if it were a complete theory for curriculum development as well as a method. It would seem that the entire curriculum was to consist of a series of projects (Tanner and Tanner 1990; Ravitch 2000; Hirsch 1999).

George Sylvester Counts (1889–1974) was another important progressive reformer (Perlstein 2000). In *The Selective Character of American Secondary Education* (1922), Counts charged that the American schools served the moneyed classes at public expense, so that “misfortune, as well as fortune, passes from generation to generation” (Counts 1922, 148). Counts’s next major work, *The Senior High School Curriculum* (1926), reported the results of his 1923–1924 survey of fifteen American secondary schools in several cities. Counts reported that although curricular innovations had been attempted, results were

often disappointing. In his *The Social Composition of Boards of Education: A Study in Social Control of Public Schools* (1927), Counts surveyed 1,654 school boards to construct a profile of their composition (Kliebard 1986). Counts found that schools not only served the privileged, they were controlled by them as well. Counts quickly became the major figure on the left within the progressive movement. While social reform was an important element of Dewey's curriculum theory, it represented the major and even exclusive element of Counts's theory as well. While progressivism generally, and Counts's political curriculum theory specifically, would wane in the decades to come, political curriculum theory would reappear in the 1970s, this time explicitly identified with the work of Karl Marx (see Pinar et al. 1995).

In 1932, progressive education was ascendant. In that year George S. Counts published a pamphlet comprised of three papers read at several educational meetings that year, papers that stirred excitement and controversy. These were entitled "Dare Progressive Education Be Progressive?" "Education Through Indoctrination," and "Freedom, Culture, Social Planning and Leadership." The resulting pamphlet was the famous *Dare the Schools Build a New Social Order?* Viewing child-centeredness as a comfortable position compatible with the economic position of the privileged classes, Counts alleged: "The weakness of progressive education thus lies in the fact that it has elaborated no theory of social welfare, unless it be that of anarchy or extreme individualism. In this, of course, it is but reflecting the viewpoint of the members of the liberal-minded upper class" (Counts 1978, 7). Counts was adamant that the problems of American education could not be solved by child-centered schools. To become truly progressive, he insisted, progressivism must articulate a social vision. This "politicization" of progressivism frightened many, particularly as Counts refused to repudiate indoctrination. Many progressives feared that espousing a social ideology would result in indoctrination. Counts agreed, arguing that indoctrination is both inevitable and positive. "All education," Counts declared, "contains a large element of imposition. . . . It is eminently desirable. The frank acceptance of this fact by the educator," he concluded, "is a professional obligation" (Counts 1932, 12). Counts's *Dare the*

Schools Build a New Social Order? was a call to arms. Reactions ranged from "inspiring!" and "stirring!" to "impractical" and "un-American." Counts split the progressive movement beyond reconciliation, and this polarization began the slow erosion and ultimate demise of education's most memorable era.

Another notable scholar of the progressive period was Horace Mann Bond. While not directly involved with the progressive movement, Bond's (1934, 1939) historical scholarship shared Counts's analysis of American education as reproductive of the political status quo. Bond's Ph.D. dissertation (completed at the University of Chicago) on African American education in Alabama received a best dissertation prize; in paperback form it was reprinted in the 1960s (Urban 1992). At Dillard University in New Orleans, Bond designed the undergraduate curriculum, borrowing from the curriculum structure of the University of Chicago. As his biographer notes, however: "Bond did more than borrow the Chicago curriculum for Dillard. He added an emphasis on the special contributions of blacks. . . . He also stressed the social sciences, since these areas of study both provided the means for analyzing the problems blacks faced and pointed the way to their possible amelioration" (Urban 1992, 61).

Bond's scholarly career was perhaps surpassed by his accomplishments in administration (Urban 1992). Bond served not only as Dean at Dillard, but also as the president of Fort Valley State College in Georgia and of his own alma mater, Lincoln University in Pennsylvania. Additionally he served as dean of Atlanta University's School of Education. Despite the demands of administration, Bond managed to publish studies of issues in African American educational life (1959, 1972, 1976). Moreover, he traveled frequently to Africa during the 1940s and 1950s, striving to support educational, political, economic, and cultural relations between Africans and African Americans. Bond is the father of Julian Bond, the well-known civil rights activist of the 1960s. Horace Mann Bond's understanding of the profoundly conservative character of American education, particularly in the racial sphere, represents a significant moment in the advancement of curriculum knowledge. Bond's work foreshadowed the establishment of race as a central curriculum discourse.

CONTEMPORARY CRITIQUES IN THE FIELD

During the years immediately after World War II, the social efficiency movement reclaimed lost status and power. This time it eschewed its explicit embrace of scientific management and American industry for a concept called “life adjustment education” (Kliebard 1986, 240–270). The surface parallels between the earlier view of curriculum preparing students for productive vocational lives and this view of adjustment to life are self-evident. In his widely read *Anti-Intellectualism in American Life*, Richard Hofstadter (1962) characterized life adjustment education as a movement stemming from the wide sweep of progressive educational reforms beginning before the twentieth century (see also Lasch 1978; for a critique of Hofstadter’s and Lasch’s critiques, see Pinar 2004). In fact, the term was first used in 1945 in connection with the neglect of the majority of high school youth who were not going on to college. Life adjustment never became a “movement,” yet the label was used by such historians as Arthur Bestor in his attack on the field of education six years later (Tanner and Tanner 1990).

There was a specific event, however, that mobilized American public opinion against not only the life adjustment movement but against what now right-wing critics dismiss as the “education establishment.” It would mean that curricular control would be wrested from public school teachers and from curriculum specialists in the universities. The specific event in question was the launching of the Soviet satellite in 1957. The Sputnik satellite launching created a national reaction that propelled curriculum discussion forward to an immediate and enduring obsession with science and technology. Simply stated, the Soviet success cast doubt on the quality of the American educational system. If our schools were strong, the public press demanded to know, why had the Soviets defeated us in the race to travel in space?

Admiral Hyman Rickover led the charge in his *Education and Freedom* (1959) and *American Education—A National Failure: The Problem of Our Schools and What We Can Learn from England* (1963). Rickover’s charges will ring familiar to today’s reader, as they have also been employed by conservative critics in the decades following, among them William Bennett, Diane Ravitch, and E. D.

Hirsch Jr. Rickover blamed the schools for military reasons (as in the case of Sputnik); later critics would focus on economic setbacks (as in the case of Japan and the U.S. trade deficit) and moral setbacks (National Commission on Excellence in Education 1983).

The first major event in post-Sputnik curriculum reform was a 1959 conference held at Woods Hole on Cape Cod, Massachusetts, and attended by psychologists, scientists, and mathematicians (not by curriculum specialists). The Woods Hole Conference was organized by the National Academy of the Sciences and supported by the National Science Foundation, the Air Force, the Rand Corporation, the U.S. Office of Education, the American Association for the Advancement of Science, and the Carnegie Corporation (Tanner and Tanner 1980, 523). A curriculum manifesto followed that would frame the National Curriculum Reform Movement.

That curriculum manifesto was Jerome S. Bruner’s *The Process of Education* (1960). In this influential book, Bruner outlined a curriculum theory based on the notion of disciplinary structure. Bruner argued that each discipline exhibited a particular structure that could be made accessible to every student. Understanding a discipline’s structure enabled the student to understand how a discipline worked: how it understood its problems, what conceptual and methodological tools it employed to solve those problems, what constituted knowledge in the discipline. Students’ understanding of disciplinary structure would enable them to learn essential disciplinary knowledge, regardless of their cognitive level. A decade later Bruner would do a complete about-face. The social, political, and racial crisis of the 1960s persuaded him that the curriculum must address issues other than those associated with the structures of academic disciplines (Pinar et al. 1995).

The theory of the structure of the disciplines was elaborated at a 1963 Conference on the Structure of Knowledge and the Curriculum held at San Diego State College. The proceedings, published as *The Structure of Knowledge and the Curriculum* (1964) and edited by G. W. Ford and Lawrence Pugno, attempted to map fundamental concepts and methods of inquiry for specific disciplines. Perhaps the most systematic attempt to do so was made by University of Chicago Professor Joseph Schwab (1978; see Block 2004). In “Structure of the Disciplines: Meanings

and Significances,” Schwab (1978) asserted that there were three “major but related sets of problems which define the area called the structure of the disciplines” (p. 10). First was the problem of determining the membership and organization of the disciplines, including identification of particular disciplines and their relations to one another. Second was the problem of identifying the structure and limits of the disciplines, structures Schwab termed “substantive.” Third was the problem of the “syntactical structure of the disciplines,” which included the “canons of evidence and proof” and “how they can be applied” (p. 14). Schwab cautioned (1978) against dogmatic adherence to disciplinary structures in curriculum development:

We may, if we like, choose but one of several pluralities of bodies of knowledge. But if we do, let it be taught in such a way that the student learns what substantive structures gave rise to the chosen body of knowledge, what the strengths and limitations of these structures are, and what some of the alternative structures are which give rise to alternative bodies of knowledge. (p. 29)

Astute critics of the 1960s curriculum reform movement have understood that military and nationalistic objectives were buried in erudite discussions of the structures of the disciplines. In the Bruner/Schwab scheme, learning was to serve as a means for further specialized learning. The long-range purpose, however,

was neither personal development nor social reform but national power. We were a warfare state seeking international supremacy in military-related scholarship. Paradoxically, the disciplinary doctrine was focused on an abstract view of knowledge to the neglect of applied knowledge. Without practical application the possibilities for transfer were limited. (Tanner and Tanner 1990, 178)

Unfortunately, astute critics were few in number and lacked influence in the 1960s, and in the avalanche of money and prestige accompanying the structure-of-disciplines approach, curriculum specialists’ critiques of the movement were ignored.

Among the major critiques of the theory of the structure of the disciplines was James B. Macdonald (1995). In 1966, Macdonald and Robert Leeper edited *Language and Meaning*, in which the discipline-

centered and scientific orientations of the period were challenged by asserting the primacy of meaning in the process of education: “Language, after all, is the vehicle by which most teaching is accomplished. Meaning is the human goal of learning, the ultimate test of any curriculum change” (Combs, quoted in Macdonald and Leeper 1966, *v*). Macdonald’s essay, “Learning Meaning and Motivation: An Introduction,” discussed the problems associated with the structure-of-the-disciplines movement and urged a concern for the person:

There is, after all, no reason to suspect that the reformulation of content alone in the schools will suffice to counter the loss of self, the dehumanization and depersonalization of people living in a technological society such as ours. Further, there is no reason to suspect that the structure of the disciplines can by magic of organization reduce the threat of nuclear holocaust, bring justice and equality to all people or provide a basis for freedom from poverty for all. (Macdonald and Leeper 1966, 5–6)

This challenge would constitute the thematic heart of the field’s reconceptualization during the 1970s (see Pinar et al. 1995; Pinar 1999).

A second major statement by Macdonald was published in *Precedents and Promise in the Curriculum Field* (Robison 1966). Dwelling on the theme of dehumanization, Macdonald advocated a person-oriented curriculum:

We will create our own image of ourselves through the ways we structure and relate to our own world. This image is in dire peril of becoming characterized by a partially ordered and conditioned set of regimented performances in the modern age. What we must strive for is to make men what they ought to be—complete human beings. (Macdonald, quoted in Robison 1966, 52)

The current school structure, Macdonald asserted, was dehumanizing. What was necessary was a reconceptualization of what school and curriculum could be, the cultivation of self-conscious and complete human beings. Macdonald had sounded a challenge that would be repeated over and over again in subsequent scholarship.

A major curriculum conference was held in 1967 at the Ohio State University, chaired by Paul R. Klohr (Klohr 1967a, 1967b, 1967c). Proceedings were edited by Klohr and published in *Theory into Practice*. Klohr (1967b) observed: "The individuals who planned the Ohio State University Curriculum Theory Conference . . . were determined, if possible, to examine curriculum theory in the making" (p. 165). At the Ohio State conference Macdonald delineated between "framework" and "engineering" theories at work in curriculum. Framework theorists were said to interpret curriculum issues by means of "aesthetic rationality," a concept Macdonald borrowed from Herbert Marcuse (1966), the well-known critical theorist widely read during the 1960s. Macdonald argued that aesthetic rationality pointed to the human capacity to cope rationally with the world on an intuitive basis. The individual must return to the world as experienced for insights that enabled one to transcend one's present systems of thought and to move to new paradigms or fresh perspectives.

Another speaker at the Ohio State Conference was Teachers College, Columbia University Professor Dwayne E. Huebner (1999). Trained at the University of Wisconsin by Virgil Herrick (as was Macdonald), Huebner's work would be enormously influential in subsequent scholarship. After completing a statistical dissertation, Huebner experienced an intensifying dissatisfaction with his own education and the education of those around him. He committed himself to study theology and philosophy, and to bring aspects of those fields to the study of curriculum. In a 1963 essay entitled "New Modes of Man's Relationship to Man," Huebner worked to shift curricular attention away from the disciplines' structures to how persons are in relation to each other. He relied on third-force psychology and existentialism, and foreshadowed several themes he and others would take up later. Among these was the matter of curriculum language. Huebner worked to "make the educator aware of his limited, and limiting thought patterns and language systems for shaping values and legitimizing action" (Huebner 1963, 162).

In his 1966 "Curriculum as a Field of Study" Huebner advanced four radical propositions. First, he argued that conceptions of curriculum tended to be tied to technique and not linked to the human spirit. Second, the field suffered from an overdependence upon values conceived as goals or

objectives. Furthermore, the field suffered from an overdependence upon learning as the primary expression of human temporality (see Pinar et al. 1995, chapter 8, for a discussion of Huebner's articulation of curriculum as concern for temporality). Third, correction of this conception of curriculum could be achieved partially by the design of an educative environment conceived as valued educational activity. Fourth, Huebner insisted that curriculum design was inherently a political process used by the curricular worker to attain a just environment. Like Macdonald and Eisner, Huebner endorsed art as a model of curriculum theory and design.

Huebner studied marginalized intellectual traditions for a new language for curriculum. The titles of his essays during the 1960s illustrate his search: "Politics and the Curriculum" (1962), "Curriculum as a Field of Study" (1966a), "Curricular Language and Classroom Meanings" (1966b), "Curricular Concern for Man's Temporality" (1967), "Implications of Psychological Thought for the Curriculum" (1968), and "Language and Teaching: Reflections in the Light of Heidegger's Writing About Language" (1969). Like Macdonald, Huebner created a literature quite different from the dominant "scientific" orientation, drawing upon existentialism, phenomenology, theology, and political theory. As these titles indicate, his scholarly range was broad; his focus traversed the daily exigencies of the classroom to fundamental questions regarding the character of the curriculum field (see Huebner 1999).

Other figures important in the critique of the structures of the disciplines approach included Stanford University Professor Eliot W. Eisner (1967, 1969, 1971a, 1971b, 1972a, 1972b) who was instrumental in creating a literature we have termed "curriculum as aesthetic text" (see Pinar et al. 1995) and in qualitative evaluation (see Pinar et al. 1995). Also influential was philosopher of education Maxine Greene, who emphasized the importance of the arts and humanities, especially philosophy and literature (Greene 1965a, 1965b, 1971, 1973, 1974, 1978, 1988, 1995; see also Pinar 1999; Miller 2004).

A major commentator on the field and soon to become its most important historian, Herbert M. Kliebard discussed the fragmentation of knowledge in its bureaucratization. In "Structure of the Disciplines as an Educational Slogan" (1975a) and "Bu-

reaucracy and Curriculum Theory”(1975b) Kliebard criticized the use of scientific management and the disciplines approach in curriculum. He questioned the “product” orientation associated with the former. Kliebard observed that the dominant metaphor for curriculum theory in the early twentieth century was borrowed from corporate management (Kliebard 1975a). In particular, he examined the influence of scientific management upon curricularists such as Bobbitt. This influence had resurfaced in the 1960s and would continue into the 1970s.

Kliebard (1975a) criticized the curriculum field for its ahistoricity. In other disciplines, he noted, progress is achieved through a dialogue between contemporary practitioners and their historical predecessors. The field of curriculum lacked this dialogue. It is “characterized by an uncritical propensity for novelty and change rather than funded knowledge or dialogue across generations” (Kliebard 1975a, 41). The field’s ahistorical posture permitted bureaucratized, standardized, and fragmented curriculum conceptions to be promoted as “new.” Kliebard (1975a) advised: “The work of the next fifty years in the curriculum field is essentially developing alternatives to the mode of thinking and the limited framework that have so clearly dominated our first fifty years” (p. 49). Those committed to a reconceptualization of the field in the 1970s took his advice very seriously indeed (see, for instance, Pinar 1999).

Accompanying the politicization of U.S. school reform in recent decades has been an effort by right-wing critics to rewrite curriculum history, conflating Deweyan progressivism with Bobbitt and Charters’s social efficiency (see Ravitch 2000). Increasingly, this sector of scholarship looms large in the study of curriculum (see, for instance, Kridel and Newman 2003; McKnight 2003). Certainly it is the terrain of politicized debate today (see Pinar 2004).

William F. Pinar

UNDERSTANDING CURRICULUM POLITICALLY

The systematic effort to understand curriculum politically asserted itself in the curriculum field in the

1970s. In contrast to the earlier efforts of Counts and Rugg (see Pinar et al. 1995), the political scholarship in the 1970s was avowedly Marxist and neo-Marxist in nature (see Stanley 1992 for more nuanced details). Developments in Britain also influenced American theorists (especially see the work of Bernstein 1977; Whitty and Young 1976; and Willis 1981).

Termed variously as the new sociology of curriculum, radical or critical curriculum theory, or politically oriented curriculum theory, this large body of work has extended its range of interests far beyond usual concepts of the political, focusing in recent years, for instance, on subjects as varied as Disney (Giroux 1999), Barbie (Steinberg 1997), and McDonald’s restaurants (Kincheloe 2002). Despite its broad range, it is possible to summarize its contributions. Certainly, one of its contributions is the view that curriculum can be understood in any comprehensive sense only if it is contextualized socially, economically, and politically (Carlson 1992, 2002). Put simply, curriculum cannot be grasped unless it is viewed in context (Cornbleth 1991).

Today no serious curriculum scholar would advance the argument that schools in general and curriculum in particular are politically neutral. Yet the political neutrality of school curriculum was a commonplace assumption in the pre-1970s literature. That the idea is largely discarded today represents one testimony to the influence of this body of curriculum scholarship. While there are many differences among political theorists, differences that have led to lively and sometimes contentious exchanges, it is possible to speak very generally about what they tend to share. Political theorists tend to view American society as rife with poverty, homelessness, racism, and political oppression. While they tend to blame these problems on the economic system (i.e., capitalism), they do regard the schools as participating in this general system of injustice and suffering. There is a visionary element among political theorists, as they tend to call for an empowered citizenry capable of altering their circumstances in favor of a more just society. The school in general and the curriculum in particular play important roles in both oppression and reform. First, we will turn to the role of curriculum in oppression, elaborated nearly twenty years ago as reproduction theory.

The first step in the effort to understand curricu-

lum as a political text involved the concept of reproduction or correspondence. In their widely read *Schools in Capitalist America*, S. Bowles and H. Gintis (1976) regarded schools as functioning in the stratum of superstructure, a stratum determined by society's economic base. A concept imported from other fields aided politically oriented curriculum scholars to advance their arguments. Louis Althusser's (1971) notion of ideology provided another major concept in curriculum scholarship (see McLaren 1989).

The hidden curriculum was another important conceptual tool for politically oriented curriculum scholars in the 1970s, first popularized by Philip Jackson (1968, 1970) and recently reformulated as "curricular substructure" by Jackson in the 1990s (Jackson, Boostrom, and Hansen 1993, 14ff). The concept refers to those unintended but quite real outcomes and features of the schooling process (Dreeben 1976; Apple 1975; Giroux 1983; McLaren 1989). The "hidden curriculum" is distinguished from the overt curriculum, or the planned curriculum, including objectives.

Michael W. Apple (1975) defined the hidden curriculum in a way that pointed to the concept of hegemony, borrowed from the Italian Marxist Antonio Gramsci (1971), who borrowed the term from Karl Marx and Friedrich Engels (1974). Gramsci employed hegemony in two senses: first, hegemony referred to a process of domination whereby the ruling class is said to exercise political control through its intellectual and moral leadership over allied classes. (This is the sense in which Marx and Engels employed the term.) Second, hegemony referred as well to the use of force and ideology in the reproduction of class relations (see Aronowitz and Giroux 1985, 88). Thus hegemony is understood to occur via the use of force and via the shaping of human consciousness.

Philip Wexler and Tony Whitson (1982) criticized the prevailing use of hegemony in political scholarship. Despite Wexler and Whitson's cogent criticisms, mainstream political scholars continued to employ hegemony as they had, to refine the basic "base/superstructure" model of reproduction that had been accepted during the 1970s. By the late 1970s, Henry Giroux and other political scholars came to worry that an overreliance upon the concept of reproduction risked a discourse of despair. If reproduction

occurred as incontestably as Bowles and Gintis and many critical curriculum scholars of the 1970s insisted that it did, there was little hope for significant change, aside from alterations in the economic base (i.e., socialism).

In his widely read *Learning to Labour*, Paul Willis (1981) introduced the concept of resistance to an eager audience now disenchanted with reproduction theory. Willis observed that the working-class boys he studied resisted both the official and hidden curriculum of their English secondary school. The roots of this resistance, he wrote, "are in the shop-floor cultures occupied by their family members and other members of their class" (Giroux 1983, 283). Willis's concept of resistance allowed political theorists to view the process of reproduction as contestable. The early 1980s saw considerable discussion of resistance theory. Attention to the significance of resistance in understanding curriculum continues to the present day (see, for instance, Munro 1998; Pitt 2003).

The shift from reproduction to resistance in curriculum political theory was evident in two 1983 texts: Henry A. Giroux's *Theory and Resistance in Education: A Pedagogy for the Opposition* and Michael W. Apple and Lois Weis's *Ideology and Practice in Schooling*. In both books one can still discern some movement away from reproduction theory. For Giroux, resistance pointed to possibilities of oppositional pedagogy (1983). He called for a reformulation of the relations among ideology, culture, and hegemony, one which would "make clear the ways in which these categories can enhance our understanding of resistance as well as how such concepts can form the theoretical basis for a radical pedagogy that takes human agency seriously" (Giroux 1983, 111). Apple and Weis also discussed the movement beyond simple reproduction theory, stating that "hegemony is not and cannot be fully secure" (Apple and Weis 1983, 28). Their view that the cultural sphere was relatively autonomous led them to move beyond resistance to a belief in the possibility of meaningful intervention in the schools. However, they cautioned that this action must be a kind of praxis and that the connections between the schools and the larger society must be made.

By 1985 scholarly efforts to understand curriculum politically began to turn away from reproduction and resistance theories to issues of political and pedagogical practice. This shift away from resistance theory

was evident, for example, in the work of Henry A. Giroux, which, beginning in 1985, moved to questions of literacy, the liberal arts, and transformative or critical pedagogy (Giroux 1988). In his 1985 *Education Under Siege*, co-authored with Stanley Aronowitz, Giroux discussed reproduction and resistance insofar as they led to radical action (Aronowitz and Giroux 1985). In the field of curriculum a “language of possibility” was necessary. Educators must become transformative intellectuals rather than “skillful technicians.” What is now necessary was to “link emancipatory possibilities to critical forms of leadership by rethinking and restructuring the role of curriculum workers” (p. 142).

This move toward emphasizing the agency of teachers and students was heard by receptive ears. For instance, Dennis Carlson (1992) worked to establish the basis for a view of teachers as an important force for transformative change in the schools. Jesse Goodman (1992) studied an alternative school in Bloomington, Indiana (the Harmony School) that seemed to institutionalize this teacher-led transformation. The emphasis upon pedagogy and agency recalled, for many, the work of Paulo Freire (1968), as several collections testified (McLaren and Leonard 1993; Darder 2002).

The effort to understand curriculum politically shifted then, from an exclusive focus upon reproduction of the status quo to resistance to it, to a focus upon daily educational practice, especially pedagogical and political issues of race, class, and gender. The major players in this effort continued to be Apple and Giroux—Apple through his voluminous scholarship and that of his many students and Giroux through his prodigious scholarly production. By decade’s end, three other scholars would become major contenders in controlling the conversation among political theorists: C. A. Bowers, Philip Wexler, and Peter McLaren.

One of the most vociferous critics of Marxist curriculum scholarship was C. A. Bowers (1980, 1981, 1984, 1986, 1987; 1991a, 1991b, 1995, 2000). His critiques have spanned a fifteen-year period and a wide range of issues. While Bowers’s criticism of political theory has occasionally sparked a return volley (McLaren 1991), his contribution more generally has, unfortunately, been overlooked and undervalued by the American field. Ignoring scholarship which political theory opposes has been one of its

strategies over the past twenty years, a strategy that has helped lead to the current balkanization of the American field. Bowers’s scholarship extended the range of political theory from the social world to the planet earth. The ecological crisis has received increasing attention in recent years, in large measure thanks to Bowers (see also Gough 2003).

Perhaps the most brilliant and caustic critic of political analyses of curriculum was Philip Wexler, himself an “insider” to debates regarding base/superstructure, ideology, hegemony, and so forth (Wexler 1976). Central to Wexler’s analysis is the linkage of academic work to social movements outside the academy. He pointed out, for instance, that the political study of curriculum arose in the aftermath of the radical student and civil rights movements of the 1960s. Wexler charged that radical critics romanticized that movement. Political scholarship “neglected its own historicity,” and following the decline of the 1960s student radicalism, it appeared as a post-movement discourse that “recapitulates that defeat, restating it abstractly and obsessively” (pp. 4, 27). Politically oriented scholarship, then, amounted to little more than “a displaced imitation of it [the student movements of the 1960s], an attempt culturally to recapitulate the practical historical course of the movement, *in theory*” (Wexler 1987, 26).

Perhaps the most important move away from reproduction and resistance theory to an interest in cultural politics was research on so-called popular or everyday—rather than “high”—culture. Now decrying that both reproduction and resistance models were limited and limiting, Giroux and Simon et al. (1989) argued that schooling must be “analyzed as part of a complex and often contradictory set of ideological and material processes through which the transformation of experience takes place” (p. 1). In this view, educational practice became both a “site and a form of cultural politics” (p. 11). Such practice enabled teachers and students to “intervene in the formation of their own subjectivities and to be able to exercise power in the interest of transforming the ideological and material conditions of domination into social practices that promote social empowerment and demonstrate possibilities” (Giroux and Simon et al. 1989, 11). Interest in popular culture and, in particular, popular media has intensified in the last fifteen years (see, for instance, Daspit and Weaver 2000, Ellsworth 1997).

Joe Kincheloe’s (1993; Kincheloe and Steinberg

1992, 1993) synoptic scholarship illustrates well the current expansive, incorporating phase of political theory, including its efforts to domesticate and thereby employ postmodernism (see Doll 1993). Kincheloe's (1993) postmodern political view is informed by liberation theology (p. 72), a theory of place and difference (pp. 69, 215), feminist and gender theory (pp. 154–155, 214), Jungian synchronicity (p. 171), ecology (p. 172), popular culture (p. 85), qualitative research (p. 91), and shows the influence of Henry Giroux and especially Peter McLaren. This influence is evident in Kincheloe's framing of postmodernism in his *Toward a Critical Politics of Teacher Thinking: Mapping the Postmodern* (1993). Postmodernism has been evident in the politically engaged scholarship of Peter McLaren (1997, 2000).

The decentering consequences of postmodernism and poststructuralism undermine what many see as the latent authoritarianism of the political perspective, including its thinly concealed self-righteousness and its employment of class guilt (manipulated, some said, by a false identification with the working class) to enlist loyalty (Beyer and Wood 1986; Wexler 1987). In undermining this central psychodynamic of political curriculum theory, postmodernism threatened the political enterprise as the field has known it for the last twenty years. Indeed, some would say it has splintered into its constituent elements, among them race and gender studies (see Pinar et al. 1995).

William F. Pinar

RACE AND CURRICULUM

Political theorists subsumed the subject of race within political theory. Among these are those theorists and scholars who tend to insist that the political character of curriculum is its most significant feature. The view of most curriculum studies scholars today, however, is that race must be regarded as an autonomous concept in the effort to understand curriculum. Of course, political considerations are important in the racial constitution of curriculum. For instance, the exclusion of third-world literature from school literature courses reveals a political aspect of canon formation. The battle over the canon involves aesthetic issues as well as historical and psychosocial

ones. However, there is an autonomous domain of race that cannot be reduced to these related discourses and issues. The power and complexity of scholarship on race and curriculum recommend its status as a major contemporary curriculum discourse. In this entry I will focus primarily upon race as related to the experience of African Americans, given the centrality of that experience to the constitution of the American nation (Castenell and Pinar 1993).

The effort to understand curriculum racially may well develop, as William Watkins (1993) suggests of "black curriculum orientations," both autonomously and intertextually, that is, "as both a part of and separate from the mainstream curriculum movement" (p. 321). Certainly racial theory must not be viewed as a form of intellectual segregation. The effort to understand curriculum as racial text would appear to be such an intellectual community, simultaneously separate and integrated within the field at large.

Before the reconceptualization of the curriculum field in the 1970s (see Pinar et al. 1995), race was regarded as marginal to the effort to develop and understand curriculum, as perusal of the historical scholarship indicates. It is now reasonable to argue that race has become central to the field, a status also supported by the intensity of public debate over multiculturalism. Until recently, however, even politically oriented curriculum scholars have tended to overlook race, ascribing marginal status to it. Cameron McCarthy (1988a, 1988b, 1990, 1993a, 1993b, 1998; also see Dimitriadis and McCarthy 2001), one of the theorists whose scholarship has been instrumental in moving racial theory to center stage, observed that those in "education have been far more forthcoming in their examination of how the variables of class and, more recently those of gender, have informed the organization and selection of school knowledge and the production and reproduction of subcultures among school youth [than they have been in their examination of race]" (McCarthy 1988a, 265).

Separated from the effort to understand curriculum politically, where it was under-theorized, race moved to center stage in curriculum discourse. Certainly the public interest in and the debate over multiculturalism have helped to support its growth in the curriculum field. Racial discourses can be regarded as occupying an expanding space between political and feminist theory, intersecting with both but independent of each (see Pinar 2001).

In an important essay published in the fall 1993 issue of the *Harvard Educational Review*, William H. Watkins summarized black curriculum orientations and situated them historically. Watkins employed the notion of curriculum orientation, which he linked with the work of Schubert (1986), Giroux, Penna, and Pinar (1981), Kliebard (1986), and Eisner and Vallance (1974). However, the notion of curriculum orientation derives not only from antecedent formulations within the field but also from “complex overlapping historical forces” (p. 323). Watkins lists the following six orientations: functionalism, accommodationism, liberalism, reconstructionism, Afrocentrism, and Black Nationalism.

Functionalism characterized black education in the eighteenth and early nineteenth century. Functionalism is an orientation characterized by self-effort, religious altruism, and “the involvement of benevolent Whites” (Watkins 1993, 323). One such benevolent person was Sarah Grimké, who admitted that: “The light was put out, the keyhole secured, and flat on our stomach before the fire with spelling books in our hands, we defied the laws of South Carolina” (quoted in Watkins 1993, 323–24). Watkins notes that there may have been sufficient permissiveness in slave society to permit limited education to occur. Such education was shaped by the conditions of slavery and directed to basic human survival: “This preparation for life is at the center of the functionalist curriculum. Consistent with colonial education, functionalism is typically basic, largely oral, and frequently includes folklore as part of its curriculum” (Watkins 1993, 324). Such education can be likened to early colonizing efforts in British West Africa, for instance. Slavery in the American South made educational efforts colonial in character. Even as informal black education became more formal, functionalism remained a significant orientation.

Watkins tells us that while functionalism is “linked to the limited and rudimentary interaction of an earlier period, accommodationism was a more widespread and politically charged curriculum for the emerging late nineteenth and early twentieth-century racially segregated, industrial nation” (p. 324). More than any curriculum orientation, accommodationism is unmistakably linked with an imposed racial agenda (Watkins 1993). Often termed the “Hampton-Tuskegee” model, this curriculum emphasized “vocational training, physical/manual

labor, character building . . . and racial subservience” (Watkins 1993, 324). It was promoted by northern corporate interests (Watkins 1993, 2001). Accommodationism is associated with Booker T. Washington, whose famous 1895 speech to a mostly white audience in Atlanta offered a hospitable platform to corporate and other conservative interests (Anderson 1978, 1988; Harlan 1983; Watkins 1993). “Offering agricultural education, vocational training, and character building as centerpieces,” Watkins tells us, “this orientation is sharply distinguished from the liberal, progressive, and more militant outlooks” (p. 325). The accommodationist curriculum aimed for incremental black progress without militancy, and appeared to accept the notion of a “backward race” (Watkins 1993, 326). Directed especially at southern rural blacks, the model was later exported to Africa (Watkins 1993). Another proponent of accommodationism, Thomas Jesse Jones, was judged an “evil genius of the Negro race” by W. E. B. Dubois (Watkins 1993, 327). Watkins explains that “Jones was not only an important curriculum theoretician and ideologist, he was also corporate America’s point man in Black education” (p. 327). Linked with colonialism, segregation, and submission, accommodationism remained the educational and social policy of the South for decades (Watkins 1993).

Watkins indicates that liberal orientations were “more hopeful” and coincided with the optimism that in part characterized progressivism during the final decades of the nineteenth and the first decades of the twentieth century. The influence of missionary philanthropists is evident here. While not opposed to industrialization, they pressed for improved social conditions. During this period a number of black colleges were established, including Fisk University, Talladega College, Morehouse College, Shaw University, and others. Watkins (1993) tells us that while “not unaffected by the racial and paternalistic attitudes of their times, the missionary community derived a liberal education curriculum that borrowed from the traditions of humanism, such as altruism, free expression, and the unfettered intellectual development of the individual” (p. 328). He continues:

Black liberal education differed little from traditional liberal thought. A clear connection to Deweyan themes is evident. The curriculum was

designed to develop the students' analytical and critical faculties, and to help students become worldly, tolerant, and capable of significant societal participation. Black liberal education placed much significance on leadership. It strove to educate teachers, preachers, civil servants, and others who would be committed to the ideals of the liberal democratic state; these ideals encompassed gradual change, electoral politics, and planned societal transformation. (Watkins 1993, 328–29)

The liberal faith in progress and change has not been shared by nationalists and separatists, whose views first appeared at the end of the eighteenth century. Nationalist and separatist “views were linked to international slavery, colonization, the debasement of Africa, and the mistreatment of African peoples scattered throughout the world” (Watkins 1993, 329). Important twentieth-century nationalists and separatists included Marcus Garvey, Noble Drew Ali, Elijah Muhammed, and Malcolm X. Pan-Africanists such as Bishop Turner and Marcus Garvey supported return to Africa, whereas others believed cultural revitalization could occur only where Africans had been transported, such as the United States (Watkins 1993). Separatists such as Black Muslims, Malcolm X, and the Republic of New Africa shared certain views with Pan-Africanists and Black Nationalists. Separatists call for the establishment of a parallel society. Watkins (1993) reports that the separatist platform of the Nation of Islam advocated a program of black-owned businesses, a separate black educational system modeled after the University of Islam, and an end to black participation in American electoral politics, all of which is aimed at cultural revitalization and independence. The black studies curriculum movement of the past twenty-five years represents one programmatic expression of the nationalist orientation (Watkins 1993).

Afrocentrism reclaims the significance of Africa not only in the history of African Americans, but also in the history of the world. Ancient Egyptian civilization has become an important reference point (Asante 1987; Watkins 1993). Included in this remembrance of the African contribution is a reconsideration of Anglo-American epistemological theories as the only appropriate models of inquiry: “Eurocentric analysis is viewed as linear. Rooted in

empiricism, rationalism, scientific method, and positivism, its aim is prediction and control. . . . African epistemology, on the other hand, is circular (Asante 1987) and seeks interpretation, expression, and understanding without preoccupation with verification” (Watkins 1993, 331).

Afrocentrics such as Asa Hilliard et al. (1990) identify six areas in which the Eurocentric curriculum has failed: (1) the history of Africa before the slave trade is omitted; (2) the history of the people of the African diaspora (including, for instance, Fiji, the Philippines, Dravidian India) are ignored; (3) cultural differences rather than similarities among Africans in the diaspora are underlined; (4) the struggle against racism is insufficiently communicated; (5) analyses of the global systems of racial oppression are undertaught; and (6) the history of the peoples of Africa is omitted (Watkins 1993, 332–33). Other Afrocentrics assert that African ways of knowing must be communicated, and devaluations of blacks implied by bureaucratic designations like “at-risk” must cease (Watkins 1993). Additionally, Afrocentrics promote the teaching of the work of lesser-known African-oriented scholars such as Cheikh Anta Diop, Yosef ben Jochannan, Chancellor Williams, J. A. Rogers, Water Rodney, Eric Williams, and others (Watkins 1993, 332).

Watkins (1993) explains that while “Afrocentrics are very provocative, in general they don't challenge the contemporary or historic economic arrangements of society” (p. 332), or the agenda of social reconstructionists (see Pinar et al. 1995; Stanley 1992). One of the major progressives and social reconstructionists, Harold Rugg, expressed interest in black educational issues (Rugg and Withers 1955, 264–80; Watkins 1993, n. 14, 333). Additionally, Watkins (1993) tells us, the platform of social reconstructionism, that is, “the ideals of a collectivist, egalitarian, reformed society found some support among the politically conscious Black intelligentsia” (p. 333). Further, black radicals during the 1930s and 1940s such as A. Phillip Randolph (founder of the Sleeping Car Porters Union) and Angelo Hearndon (active in southern sharecroppers unionization movements) were very much concerned with educational issues in ways consistent with the social reconstructionists (Watkins 1993, 333). Despite the absence of formal ties between social reconstructionists and black intellectuals and radicals, an ideological affinity is unmistakable. W. E. B.

Du Bois, “the pre-eminent twentieth-century Black educator” (Watkins 1993, 333), advocated views indistinguishable from those of social reconstructionists such as Rugg and Counts. Indeed, in an earlier essay, Watkins characterized Du Bois as a “black social reconstructionist” (Watkins 1993).

Cameron McCarthy (1993a, 1993b) views multiculturalism as representing a “curricular truce” between liberals and black radicals. For McCarthy, multiculturalism absorbed that black activism aimed at restructuring schools, re-expressing activism as so-called nonracism. Multicultural education represents an effort to acknowledge cultural diversity in the curriculum. Despite its noble intentions, it is problematical. McCarthy (1993a) characterizes multicultural education as a “contradictory and problematic ‘solution’ to racial inequality in schooling” (p. 225). McCarthy reviews the history of multicultural education, beginning with its assimilationist antecedents during the 1950s and 1960s.

Multiculturalism, McCarthy tells us, was replaced by a so-called pluralist model that advocated cultural diversity. Multiculturalism, in McCarthy’s words, “disarticulated elements of Black radical demands for restructuring of school knowledge and rearticulated these elements into more reformist professional discourses around issues of minority failure, cultural characteristics, and language proficiency” (1993a, 228). Multicultural proponents emphasize: (1) cultural understanding, (2) cultural competence, and (3) cultural emancipation.

We are what we know. Linking knowledge and identity, Louis A. Castenell Jr. and William F. Pinar (1993) argued that Americans are also what they do not know. If what Americans know about themselves—American history, American culture, the American national identity—is deformed by absences, denials, and incompleteness, then the American identity, both as individuals and as Americans, is fragmented. A fragmented self, they argued, represents a repressed self. Such a self lacks full access both to itself and the world. Repressed, the self’s capacity for intelligence, for informed action, even for simple functional competence is impaired. Its sense of history, gender, and politics is incomplete and distorted. Denied individual biography and collective history, African Americans have been made political appendages to European Americans.

Linking debates regarding the “canon” with questions of self, identity, and difference enlarges the curricular debate from an exclusive preoccupation with equity or with multiculturalism to include debates regarding the relationship between knowledge and ourselves (see McCarthy 1988b). In this regard, the “Eurocentric” character of school curriculum functions not only to deny role models to non-European-American students, it denies self-understanding to white students as well. The American identity is not exclusively or even primarily European American. Fundamentally, it is African American. For this point Castenell and Pinar refer not only to well-publicized demographic trends (minorities are predicted to constitute the majority perhaps by midpoint in the twenty-first century); they refer to the American past and the present. Although still unacknowledged by European Americans to an extent, they observe, the American nation was built by African Americans. African Americans’ presence informs every element of American life. The concept of “white” is predicated upon an excluded, racialized “other.” For European-American students to understand who they are, they must understand that their existence is predicated upon, interrelated to, and constituted in fundamental ways by African Americans (Goldberg 1990).

The American self denied and repressed, Castenell and Pinar argued, “acts out” repression via imperialism in foreign policy and political, economic, and cultural repression domestically. The refusal—sometimes unconscious, sometimes not—to incorporate African American knowledge into the mainstream curriculum is a psychoanalytic as well as a political process of repression. Understanding curriculum as racial text suggests understanding education as a form of social psychoanalysis (Kincheloe and Pinar 1991). The school curriculum communicates that which we choose to remember about our past and that which we choose to believe about the present. It also might elicit what we have forgotten, and in so doing might crack the walls of repression and allow a more accurate memory of the past to surface. Understanding the past accurately might allow us then to grasp the present. How do representations of race and difference communicate a sense of the American identity? The American identity is constructed partly by denial, by maintaining fictions. The

American “self” is not exclusively or even primarily European. That delusion represents a fantasy, a flight from historical and cultural reality (Castenell and Pinar 1993).

Beverly Gordon (1993) focused on African American cultural knowledge, “because it is born out of the African-American community’s historic common struggle and resistance against the various oppressive effects of capitalism and racism” (p. 265). In her “Toward Emancipation in Citizenship Education: The Case of African-American Cultural Knowledge,” Gordon provided an abbreviated history of this knowledge. She suggested that:

a major shortcoming of the African-American intelligentsia . . . has been their failure to take the work . . . [of] Booker T. Washington, W. E. B. DuBois, Kelly Miller, Carter G. Woodson, and William T. Fontaine . . . [and] synthesize it into a body of knowledge and to make it the basis of a common intellectual heritage that would give leadership and direction to the African-American community. (pp. 275–76)

African American scholars, she continued, must return to this legacy, to the whole of African American traditions, history, and cultural thought and construct an African American mode of rationality independent of Western European domination. African American knowledge needs to be synthesized in what she terms an “African-American epistemology” (Gordon 1993, 275–76).

Americans are multicultural, multiclassed, and multigendered. Despite this fundamental truth, various elements in the American national character continue to be devalued, indeed repressed. Toni Morrison (1992) made this point vividly: “certain absences are so stressed, so ornate, so planned, they call attention to themselves; arrest us with intentionality and purpose, like neighborhoods that are defined by the population held away from them” (p.11). Not only the politically repressed suffer—although surely their suffering is the greatest, the most intolerable (Castenell and Pinar 1993).

European Americans “suffer” as well. Aware or unaware that they are racialized creatures, that their knowledge is racialized knowledge, indeed that their material and cultural wealth is in significant measure the product of “others,” especially African

Americans, European Americans forget history and politics—and themselves (Castenell and Pinar 1993). They cannot grasp that they “have been shaped and transformed by the presence of the marginalized” (Carby 1989, 39).

What does understanding curriculum as a racial text imply for African American scholars? Cornel West suggested that:

Black cultural workers must constitute and sustain discursive formations and institutional networks that deconstruct earlier Black strategies for identity formation, demystify power relations that incorporate class, patriarchal, and homophobic biases, and construct more multivalent and multidimensional responses that articulate the complexity and diversity of black practices in the modern and postmodern world. (West 1990, 105)

In West’s statement we see clearly how poststructuralist categories—such as deconstruction—can inform racial theory and produce political strategy.

In whiteness studies, in historical studies, in anti-racist education, the centrality of race in contemporary curriculum studies is obvious (see Crocco, Munro, and Weiler 1999; Lomotey and Rivers 1998; Feagin and Hernan 1995; Frankenberg 1993, 1997; Kincheloe, Steinberg, Rodriguez, and Chennault 1998; Pinar 2001, 2004; Watkins 2001).

William F. Pinar

CURRICULUM AND GENDER

Since its beginnings, organized schooling in the United States and the national conversation on education have been concerned with gender, although the scholarly appreciation of this historical fact is rather recent. In other words, schooling and the discourses on schooling have been informed historically by the meanings we have given to the division of human beings into male and female (Tyack and Hansot 1990) and to those attitudes and discourses that prompt us to divide the world according to biological and hormonal differences we mark as sexual (Butler 1990). Concerns with gender have taken many forms in curriculum studies, from questions

regarding the value of coeducation to debates regarding the differences and similarities between females and males; from criticism of institutional sexism and heterosexism to analyses of the way gender permeates our concepts of knowledge and our ways of knowing (see Pinar et al. 1995).

To understand curriculum as gendered is to investigate the relationships between curriculum and gender. It is to subject the curriculum and its discourses to feminist analysis, radical homosexual or gay analysis (or queer theory; see Doty 1993; Pinar 1998), and gender analysis (this last phrase subsuming the first two), all concerned with the unequal ways people are regarded due to their gender and sexuality, and the ways we construct and are constructed by the prevailing system of gender and sexuality (Pinar et al. 1995).

In the 1970s radical feminist critics critiqued the reality interpreted by men in institutions of higher learning. These descriptions of reality had been compartmentalized into disciplines and claimed objectivity. During the 1970s each of the academic disciplines came under scrutiny by feminist critics (e.g., Daly 1973, 1978; Rubin 1975). Several conclusions were reached: (1) the research methodologies of these disciplines were found to prevent certain kinds of information; (2) whole areas of inquiry related to women continued to be overlooked or trivialized; (3) generalizations about both sexes were made based on the study of men only; (4) research itself, while claiming objectivity, was revealed to be value-laden; (5) knowledge was seen to be treated as something external to human consciousness; (6) the difficulty of introducing new ideas was exacerbated because extant knowledge and modes of inquiry produced knowledge consonant with what was already accepted and with the methodology itself; (7) knowledge was revealed as knowledge of men, not of human beings; (8) women were devalued in all the disciplines; and (9) a dualistic perspective, highly rational and technological, was revealed to guide much research (Pinar et al. 1995).

Partially in response to these findings but also created as an alternative to the hegemony of patriarchy in institutions of higher learning, women's studies programs first appeared in the 1970s. These programs attempted, in part, to redefine and reconstruct the academic disciplines. According to Peggy McIntosh (1986), Director of the Wellesley College Center for

Research on Women, during the 1970s more than one hundred projects investigated the redesign of the academic disciplines. In the 1980s, an interest in curricular change through women's studies was articulated by McIntosh (1986), and Mary Kay Tetreault (1985). These approaches to curriculum reformation began in the 1970s as an ordering of stages through which disciplines would pass and as a conscious attempt, as Kay Boals (1976) wrote, to "demystify the dominant other" and "remythologize one's own tradition" (p. 199).

Stage theory was exemplified by McIntosh's (1986) analysis of phases in curriculum change in history. Stage one, she said, is "womanless history." Stage two is "women in history" where women exist as exceptions. Stage three is "woman as problem" in history. Here the barriers and structures that have kept women out of history are examined. Stage four is "women's lives as history" in which pedagogical methods become less hierarchical and the construction of knowledge through the lens of gender is investigated. Stage five is a radical transformation based on holism and affiliative modes of knowing and relating.

Psychoanalysis, phenomenology, autobiography, and political and feminist theory inform the work of Madeleine R. Grumet (1988). Grumet postulates the "look" as one way to emphasize the intersubjectivity of the human world, "a direct passage between persons" (p. 96). "That is not to say," she writes, "that our minds created the world but that the world we know is the one we share with others" (p. 95). The genesis of knowing resides in intersubjectivity and, specifically, in the primordial relationship of infant and mother. While parenting and pedagogy are not isomorphic, Grumet believes that each affects the other. For both, the look is an index of the complex of relations that prevail in both parenting and pedagogy. Grumet explains that the look of parenting and pedagogy, however, differs.

Grumet tells us that the look of parenting includes touch; it recalls the symbiosis of the infant-mother relationship and the tactile quality of that relationship. The look of teaching rejects touch. Grumet notes that the teacher is "untouchable" (p. 111), apart from the student, invulnerable. Further, the intersubjective character of the classroom is disguised by the traditional seating pattern of rows. Grumet writes: "By arranging students in rows, all eyes facing front, directly confronting the back of a fellow's

head, meeting the gaze only of the teacher, the discipline of the contemporary classroom deploys the look as a strategy of domination" (1988, 111).

The gaze of the teacher is often impersonal and determining, just as is the look of her supervisor, ordinarily a male administrator who, for the sake of evaluating her teaching, "observes" her. Women came to classrooms as victims of the look, pornography being the most obvious. Is teaching an avoidance of the look? "Dreading the objectification of the look, prohibited from extending touch, the female teacher turns to talk to assert her subjectivity" (p. 113). While the predominance of teacher talk in classrooms is most readily traceable to traditions of Greek rhetoric and Christian liturgy, it is also traceable to the psychodynamics of the look. In such a view, (female) teacher talk represents the "sending out of waves of words to ward off the look that surges toward us in the stillness of the silent classroom" (p. 113). In this regard, avoidance of the gaze of male students may help account for the female teacher's tendency to call on boys more frequently than on girls. For Grumet (1988), the look expresses the subjectivity and specificity of a particular relationship (as in a parent-child relationship), while the gaze appears objectifying and impersonal.

Parenting permits reciprocity because it occurs over time. Grumet writes: "The history of the parent/child relation is one of exchanged glances. The child will walk many miles and make many visits to understand the look under which he has stood" (1988, 116). The adult returns to his or her parents repeatedly, in part to study again the gaze under which he or she has come of age. And in old age, as the bodily decline reverses the relations of dependency, "the adult who was once the child is now the overseer within whose gaze the aged parent sees his former power and possibility" (p. 116). Denied such duration and intimacy, pedagogy precludes reciprocity. Further, for those teachers who regard the curriculum as prohibition, as denying access to the world as lived, as intersubjective, the look is bloodless. Grumet concludes: "When curriculum is alive, it invites the student to reappropriate it as she reclaims her identity from its origin in her parents' look, grasping and dislodging and reclaiming its perspective. When the curriculum is a dead sign, all of us, teachers and students, stumble under its empty stare" (116).

Grumet explains that transference—a psychoana-

lytic concept which refers to the reproduction of past emotional patterns in present relationships—denotes the displacement of original, often traumatic feelings that are transferred from those first associated with them to the psychoanalyst. One of the projects of psychoanalysis is the disclosure and analysis of the transference relationship, permitting the analysand (or patient) to travel back to possibly blocked, repressed experience. Grumet extends the concept of transference beyond psychotherapy to the relationship between student and teacher. Speaking of teachers Grumet writes: "We expect them to know and, in that knowing, to confer knowledge and power on us" (1988, 122). This expectation to know derives from original dependence upon the parent, usually the mother, and becomes transferred to teachers. However, the medium of dependence—language—is the symbolic order, associated with the father. Grumet draws upon Jacques Lacan's (1997) assertion that language is always the "other" and that at the basis of self-formation is an estrangement—the other, a "not-self." Grumet notes: "The language of the other is the basis of the self, and the desire for the other is always a desire to appropriate that power and to undo the alienation that is the basis of ego identity. . . . We enter the symbolic order in an action of desire that can never be fully gratified" (p. 125).

Because language—the symbolic order—cannot ever restore the sense of self apart from other, "all symbolic activity," Grumet explains, "is motivated and outstripped by desire" (1988, 125). She continues: "Now we have arrived back in the classroom, facing front, eyes on the instructor. What funds our attention is hope. We expect to grow into a self within his look. But we always suspect that he is actually looking not at us but at another whom we do not know but who is finally more powerful and compelling than we" (p. 125).

Traditional teaching, because it tends to focus primarily, sometimes exclusively, upon the curriculum as object, curriculum as textbook, focuses on the symbolic, phallic order created by men, rather than the concrete, embodied world of children created by women. Traditional teaching assumes that the student's understanding is misguided and inadequate; rarely is the student's reading the subject of classroom discourse. Indeed, it is the lived experience of students—linked as it is to the text, mediated and expressed through language—that is missing from

the traditional classroom. Of traditional teachers Grumet writes: “For the first time I understand that when they are ripping me off they themselves are struggling to recover their losses. Must we perpetuate this economy? Must we observe the golden rule of pedagogy and withhold from others what has been withheld from us?” (1988, 128)

If teaching carries with it the teacher’s as well as the students’ transferences, we must become aware of the original look under whose gaze we first came to form an identity. To learn to teach, then, requires studying the transferences operative in classrooms. Grumet advises that we “build our pedagogies not only around our feeling for what we know but also around our knowledge of why and how we have come to feel the way we do about what we teach. Then, perhaps, teaching the text may lead us to devise new forms of knowing that will not compel our students to recite the history and future of our desire” (1988, 128).

“Curriculum,” Grumet asserts, “is our attempt to claim and realize self-determination by constructing worlds for our children that repudiate the constraints that we understand to have limited us” (1988, 169). A yearning for affiliation has become associated with weakness and with the family, especially with women. As Grumet argues in her gender history of American public schools, women embraced the public world, the symbolic order, as a defense against the constraining, enforced intimacy of the nuclear family. Indeed, the public world becomes embraced more adamantly to forget how much we miss the intimacy of the mother-child bond. Referring to the feminist political theory of Jean Elshtain (1981), Grumet explains:

The history of political thought stresses this repudiation of the essential connections within which our humanity evolves: The male repudiates those feelings and actions that he associates with femininity in order to achieve maleness; the female repudiates her mother in order to participate in the public world. Politics repudiates the family. Ethics repudiates the experience of the body, of particular persons, and of intimacy as it strives to construct a logical argument to support autonomy and differentiation. (1988, 170)

Parents have been, in general, excluded from curriculum decisionmaking, an exclusion justified on the

grounds that their interests are too parochial and self-interested. The vision of a “common culture” has been somehow a vision bleached of particularity, including the specificity of ethnicity and family. Somehow that which we experience and live in our everyday lives is not “common.” Indeed, “common culture” always implies a rejection of contemporary life. Grumet notes: “Because the common culture is always anywhere other than this world, its curriculum rarely speaks to a world children know, a world accessible to their understanding and action. It is a curriculum that controls through mystification, encouraging placid passivity. . . . Power wears many masks, and if in some countries it appears as the Church or the Party, or even the People; here it is the Common Culture” (1988, 171–72).

In the common culture our children become “other people’s children.” They lose the intimacy and specificity that characterize the parent-child bond in the name of the meritocracy; they gain anonymous labels such as “gifted” or “disadvantaged,” bureaucratic designations designed to transport our flesh and blood into a bloodless public sphere: “Few of us would excuse our own children from their futures with the grace and understanding we extend to other people’s children. Other people’s children are abstract. They are reading scores, full-time equivalencies (FTEs), last year’s graduating class, last week’s body count” (1988, 173).

A curriculum for one’s own child, Grumet observes, would be a conversation in which our son’s and/or daughter’s response is a necessary, welcomed, and prominent feature. Curriculum decisions for one’s own children involve parents’ and children’s participation. Parents and children would join teachers in the interpretation of educational experience, in making choices regarding “next steps.” Such parental participation goes beyond the traditional politics of “local control”; such participation brings parents into the daily life of classrooms. Parental “participation would interrupt the march to the common culture without necessarily shifting the whole parade to another destination” (1988, 174).

Janet L. Miller’s lyrical and powerful scholarship helped break the silence regarding gender in curriculum studies. In 1982 she reported the emerging discourse on gender and sexuality so that “feminist pedagogy and curriculum [may] . . . reciprocate, inform, and alter one another” (p. 5). Reviewing re-

cent work by Grumet, Pinar, Taubman, and Wallenstein to illustrate an “evolving feminist pedagogy” (p. 10), Miller noted that “breaking silence with my students creates a way for me to ground my fears of the unnatural silences and to focus my voice, my energies upon the articulation of our work together” (p. 10).

Perhaps more than any other major feminist theorist, Miller (2004) has focused upon “our work together.” This acknowledgement of the presence and conservation of others is expressed in her collaborative work with students, focused on issues of voice, community, and selfhood (1986, 1987). Of central concern have been the possibilities and the contradictions that emerged in feminists’ attempts to develop collaborative and dialogical relationships with their students and colleagues (1990). Her work during the 1980s underlined her observation early in the decade that “the sound of silence breaking is harsh, resonant, soft, battering, small, chaotic, furious, terrified, triumphant. The tentative first murmurs are becoming a chorus” (1982, 11).

In *Creating Spaces and Finding Voices*, Janet Miller’s (1990) emphasis included not only the quest to integrate the fragmented parts, the contradictions within the self, but also explorations of ways in which those fragmentations and contradictions reflect and frame social, cultural, and historical constructions, positionings, and representations of women and men, and their work as teachers, researchers, and curriculum creators. The emphasis in *Creating Spaces and Finding Voices* is less on forging a unified whole, either within collaborative communities or within individuals, and more on exploring the connections that are possible among those fragmentations and differences.

Following Grumet, Jo Anne Pagano warned against celebrating “the amorphous thoroughly individualized, subjective, male-romanticized, theatricalized version of the female” (Pagano 1988, 527). Rather, Pagano argued, there was no conflict between nurturance and authority, between paternal and maternal power. Authority, she continued, arose from the affiliation one had with one’s students, not from the law. The law provided paternal power, but it had to be worked through by women teachers, contradicted, and finally employed in the service of affiliation.

These important problems—women’s relationship

to their own intellectual development, the ambivalent relationships women and women teachers have to males and to patriarchy, the constitution of women’s authority in a world constituted by asymmetrical gender arrangements—were woven together in Pagano’s *Exiles and Communities: Teaching in the Patriarchal Wilderness* (1990). In that carefully reasoned work, Pagano argued that teaching was a morally charged and politically infused endeavor that for women was complicated by gender. Since, as she wrote, knowledge is power, and those who possess it are powerful and those who define what it is are the most powerful, teaching is inherently involved with questions of power.

Exiles and Communities addresses ethical questions of education, questions of knowledge and power, of authority and of the relationship between the individual and the community. It explores alternatives to those methods, assumptions, and goals that preserve male authority. Further, the book explores how women teachers can build communities in the wilderness, a wilderness that is androcentric, but it is also “symbolic of the powerful devouring mother” (1990, 9).

The most visible male scholar working to understand curriculum as gendered (and more particularly, as homosexual or gay) is James T. Sears (1990, 1992, 1997, 1998). While the most visible, Sears is not the only curriculum scholar interested in homosexual (or gay or queer) issues (see, for instance, Pinar 1998, 2001; Silin 1992, 1995; Tierney 1993a, 1993b; Britzman 1998a, 1998b, 1998c, 2000), but he is the key figure. He and other important scholars in this sector have participated in *Queer Theory in Education* (Pinar 1998), the first collection of its kind in the field of curriculum studies and in the broad field of education generally.

Sex education is an important curricular area where gender theory surfaces explicitly. One scholar of sex education programs has noted that “failure to recognize the social and historical dependency of sex allows for the reification of our conceptualizations of sex into objective elements of a fixed and socially independent human nature” (Diorio 1985, 246). One area, for instance, in which this essentialist view of sexuality surfaces is in literature on sex education and adolescent pregnancy (Diorio 1985). This area received book-length attention in *Sexuality and the Curriculum: The Politics and Practices of Sexuality*

Education, edited by James T. Sears (1992), which challenges mainstream sex education. What Pinar and Miller wrote in 1982 remains true today: “Feminist thought to date operates in relative isolation from other eddies of curriculum theory and practice, but its ripples will have profound . . . influence” (p. 222). Perhaps no other single discursive configuration in the field circulates these traditional concepts into a kaleidoscopic theoretical whole as effectively as that sector of scholarship that labors to understand curriculum as gendered.

William F. Pinar

CURRICULUM AND ITS INSTITUTIONALIZATION

Much curriculum scholarship is focused upon the school. Understanding curriculum as it is institutionalized suggests understanding curriculum as it functions bureaucratically (see Kliebard 1975b). Questions within this domain include: Does the curriculum work? How can it fit the institution? Can the curriculum enable the school to function more smoothly and efficiently? How do we measure success? Understanding curriculum as it is institutionalized is, fundamentally, an ameliorative approach linked explicitly to the everyday functioning of the institution (Kliebard 1970).

The point of curriculum development in the traditional field (1918–1969) was to make incremental improvements in the school as institution. In the present period, the focus of curriculum development, scholarship, and research has diversified somewhat. Now understanding has also become an issue. However, institutional maintenance or improvement remains a paramount reason for this genre (see Pinar et al. 1995).

This entry is organized around two general categories: curriculum development and teaching. Curriculum development as a general category is divided into the following domains: (1) curriculum policy and school reform, (2) curriculum planning, design, and organization, (3) curriculum implementation, (4) curriculum technology, (5) curriculum supervision, and (6) curriculum evaluation. Included in the sec-

ond general category (that of teachers and teaching as they are related to curriculum) are (1) pedagogy and (2) textbooks. Concluding this entry are reports on two additional areas: curriculum and students, and the extra-curriculum.

These categories reflect institutional, bureaucratic concerns. Interests in life history, in politics, in the lived or phenomenological experience of those in schools are present but they are in service of institutional interests, that is, teacher development, preparing teachers, evaluating programs, and so on. Studies of ideas independent of institutional concerns, about profound human aspirations for meaning, excitement, and joy—while sometimes given a rhetorical acknowledgment—tend to be absent in the effort to understand curriculum institutionally (see Huebner 1999; Macdonald 1995; Pinar et al. 1995).

In their review of research on curriculum policy, Richard Elmore and Gary Sykes (1992) reported that such research “is anything but a well-organized, distinctive field of inquiry” (p. 185), characterizing the body of work on government involvement in curriculum as “loosely organized, both topically and conceptually” (p. 185). They identify three sources of policy research: (1) disciplinary research applied to curriculum, especially by the fields of sociology, history, and political science, (2) evaluation of government-sponsored interventions thought to be of curricular significance, and (3) that public-policy research which is focused on curriculum issues. Curriculum theory itself attends to policy issues, such as Whitson’s (1991) important study of Supreme Court cases affecting censorship and related curriculum issues.

Elmore and Sykes (1992) define curriculum policy “as the formal body of law and regulation that pertains to what should be taught in schools” (p. 186). Research on curriculum policy investigates how regulatory events occur, including what these events require of the curriculum. They note that policy often follows interventions rather than precedes them, as they would in a rational model. Indeed, policies often function as rationales for political interventions already made.

One important example of curriculum policy as instrumental action is the conservative agenda for school reform. Perhaps the opening volley was Adler’s *Paideia Proposal*, published in 1982, followed by *A Nation at Risk* in 1983 (National Commission on

Excellence in Education [NCEE]). These reports accused American schools of decline and a lack of vision, and teachers of incompetence. The sense of alarm came this time not from military competition, as in 1957 (see Pinar et al. 1995), but from economic competition with Japan and Germany (see Pinar et al. 1995). Soon to follow were conservative curriculum proposals by Allan Bloom (1987), E. D. Hirsch (1987, 1999), and Diane Ravitch (2000).

Conservatives attempt to rewrite the history of curriculum theory (see Hirsch 1999; Ravitch 2000). Herbert Kliebard (1986) observed that Hirsch misunderstands Dewey while reducing curriculum to a list of objectives or facts. Despite misunderstandings, the rhetoric of school reform has been dominated by conservatives, both in government and in education. In addition to a reassertion of a Eurocentric core curriculum in the universities was the notion that American elementary and secondary schools should be more like American business (Pinar 2004). Various business-school coalitions have been formed at national, state, and local levels. Illustrative of this view is Denis P. Doyle, Senior Research Fellow at the Hudson Institute, who asserted: “The only group in America that can bring this off successfully is the American business community. They are the stakeholders with the most to gain and the most to lose because of bad schools” (1991, 18).

From the right and left there is agreement on the need for significant change, or, in the jargon of the day, on “restructuring.” Restructuring and decentralization both followed from effective schools research. Critical of this notion, and of the more general characterization of schools as a business, Pinar insists that linking the public school curriculum to test scores and then requiring teachers to engineer improvements in students’ test scores amounts to a political maneuver that performs cultural authoritarianism for the ring-wing in the name of “accountability” and, presumably on behalf of “under-served” populations (Pinar 2004).

Curriculum decentralization has attracted international attention (Silva 1993). In 1993, decentralization was the subject of an international seminar sponsored by UNESCO in Santiago, Chile, and chaired by Juan Casassus. One of the most perceptive students of decentralization (and school reform generally), Hans Weiler (1993) argues that decentralization advocacy ordinarily takes the form of one

of three arguments: the redistribution argument, referring to the sharing of power; the efficiency argument, linked to a faith in the cost-effectiveness of the educational system through a more efficient deployment and management of resources; and a culture of learning argument, pointing to the decentralization of educational content.

The written curriculum policy presumably proceeds to the planning and design of the curriculum which, when implemented, will institutionalize the policy. While the history of curriculum design is long (see Short 1986, for an abbreviated history, and Kliebard 1975d for a sketch of the metaphorical roots of design), perhaps the best-known traditional view of curriculum planning and design is that of J. Galen Saylor, William Alexander, and Arthur Lewis (1981), although the topic is venerable enough to have engaged scholars whose work functioned to reconceptualize traditional categories (Macdonald and Purpel 1987).

For Saylor, Alexander, and Lewis, the planning and design process is a rational, orderly, and bureaucratic one. As indicated in the table of contents to their *Curriculum Planning for Better Teaching and Learning* (1981), it includes attention to processes and roles, to collecting data, and translating these into goals and objectives. After establishing goals, curriculum planners then select an appropriate curriculum design.

Saylor, Alexander, and Lewis (1981, 206) explain how each curriculum design privileges a certain order of goal, from learning the school subjects and academic disciplines in design number one, to cultivating individual interests, a design we might associate with the child-centered wing of the progressive education movement (see Pinar et al. 1995). As they point out, no one design is educationally comprehensive. That is to be expected, given the “two contradictory tendencies—specialization and integration” (Vars 1982, 215; see also Smith, Stanley, and Shores 1957).

Curriculum design has also been articulated as a consequence of theory. Kieran Egan’s (1990) elaborate and sophisticated curriculum design for middle-school-aged students is based on “romantic understanding” and expresses Egan’s view that stories represent the substance of education (Egan 1986). Another thoughtful, theory-inspired curriculum design is entitled *The Challenge to Care in Schools: An Alternative Approach to Education*, written by Nel

Noddings (1992), whose feminist theory has been influential (see Pinar et al. 1995). In this volume Noddings makes a significant contribution to the concept of curriculum design. She begins by distinguishing her view from the dominant design emphasis upon the academic disciplines. She explains:

My argument against liberal education is not a complaint against literature, history, physical science, mathematics, or any other subject. It is an argument, first, against an ideology of control that forces all students to study a particular, narrowly prescribed curriculum devoid of content they might really care about. Second, it is an argument in favor of greater respect for a wonderful range of human capacities now largely ignored in schools. Third, it is an argument against the persistent undervaluing of skills, attitudes, and capacities traditionally associated with women. (1992, xii)

In an important review of research on curriculum implementation, Jon Snyder, Frances Bolin, and Karen Zumwalt (1992) list three major approaches. The first, possibly the most common, is termed the “fidelity perspective,” by which they mean a focus on “measuring the degree to which a particular innovation is implemented as planned and identifying the factors which facilitate or hinder implementation as planned” (p. 404). The assumption here is that successful curriculum implementation is characterized by fidelity to the original plan. This is the traditional conception of curriculum implementation (for alternatives, see Carson 1984). For example, traditionalist Mauritz Johnson (1974) had elaborated “a PIE technical model: planning, implementation, evaluation” (p. 375).

Michael Fullan (1985) has elaborated what is necessary for change to occur at the individual level. While some of the following characteristics overlap with the previous list of general factors affecting implementation, these focus upon the process of individual teachers changing their thinking, a view that Anne Bussis, Edward Chittenden, and Marianne Amarel (1976) would seem to agree is essential to successful curriculum implementation.

CURRICULUM AND TECHNOLOGY

The Greek word for technology is *techne*, translated as art, craft, or skill. Plato regarded *techne* and

episteme (translated as systematic or scientific knowledge) as closely related. For Aristotle, *techne* was the systematic use of knowledge for intelligent human action. Broadly understood, then, technology refers to any system of practical knowledge; it is not restricted to hardware. A more contemporary definition of technology by Donald Ely is: “any systematized practical knowledge, based on experimentation and/or scientific theory, which enhances the capacity of society to produce goods and services, and which is embodied in productive skills, organization, or machinery” (see Bull 2002).

Technology has influenced curriculum and especially instructional design. The development and employment of hardware has been secondary to the employment of technological schemes for instruction and learning. Behavioral psychology epitomized this technological view of education in the 1960s, but it was soon eclipsed by Piagetian developmental psychology in the 1970s, which was then eclipsed by cognitive psychology and cognitive science. In this latter formulation, the emphasis upon behavior and developmental stages, evident in the behavioral and Piagetian approaches, was replaced with an emphasis upon the “organization, processing, and storage of information by the learner. . . . From the cognitive view, educational technology should be focused on activating the appropriate learning strategies during the instructional process rather than merely initiating behavioral responses” (Saettler 1990, 14). Carl Bereiter and Marlene Scardamalia (1992) note that, contrary to common belief, cognitive scientists do not believe that the computer is an adequate model of the mind.

For a comprehensive (if now somewhat dated) history of educational technology see, for example, Paul Saettler’s *The Evolution of American Educational Technology* (1990). From this study, it is clear that educators’ interest in computers and their curricular possibilities has been unwavering. However, several thoughtful observers of the scene have expressed concern for what can seem an excessive enthusiasm for computers. For instance, Douglas Sloan (1985) has noted that the current wave of enthusiasm for the use of computers in the schools is uncritical. C. A. Bowers (1993, 1995, 2000) has been concerned that human experience may be distorted to coincide with computer capability, rather than computers being employed to extend and enlarge

human intelligence and capability. Bowers (1993) notes that insofar as computers embody the conceptual framework (and by consequence the ideology) of these experts who devise them, the technology itself can be viewed as reproducing a specific ideological orientation. Further, Bowers believes that this ideology is based on fundamental misconceptions regarding the nature of the individual, the nature of knowing (including intelligence) and, more specifically, how individual empowerment relates to social progress.

“This myth,” C. A. Bowers (1995, 4) asserts, “is predicated on an anthropocentric view of the universe and the further assumption that our rationally based technology will always enable us to overcome the breakdowns and shortages connected with the natural world.” More specifically, Bowers (1995, 12) argues, “the cultural orientations amplified through educational computing are the very same cultural orientations that have contributed to destroying the environment in the name of progress.”

In *Let Them Eat Data*, Bowers (2000, 22) questions “whether computers lead us to substitute decontextualized ways of thinking about the world for the sensory encounters with the natural world that intertwine our lives.” Bowers criticizes those who naively accept “Western myths that represent change as linear, progressive, and evolutionary” (Bowers 2000, 8). Many would suggest that he overstates his case when he asserts, “the inescapable reality is that computerization commodifies whatever activities fall under its domain” (2000, 8).

Few would agree that commodification can be ascribed causally only or even primarily to “computerization.” In terms of the struggle for ecological sustainability, computers might, in fact, be helpful, at least in the dissemination of information regarding the crisis. While “computers provide us a window (information) for recognizing the early warning signs of over stressed ecosystems,” Bowers allows (1995, 13) “they also mesmerize us into thinking this is the primary form of knowledge we need for correcting the problem.”

Perhaps, but it seems also true that in the conceptualization of the “biosphere” (Bowers 1995, 1) individuality (not “individualism,” its parody) disappears, as historian Christopher Lasch (1984, 19) suggests: “The minimal or narcissistic self is, above all, a self uncertain of its own outlines, longing ei-

ther to remake the world in its own image or to merge into its environment in blissful union.” Bowers acknowledges “the breakdown in the distinction between our private and public lives,” but appears to reinscribe this immobilizing state of affairs in his embrace of “the biosphere” (2000, 58).

Bowers’ (2000, 12) strongest point is that “our ecological crisis is essentially a crisis of cultural beliefs and values,” and, as such, it is a problem, in part, of education.” It is culture—in our context, American culture—that must be reconstructed. While Bowers sees little reason for hope in the institution of schooling at any level (because it remains embedded in capitalism and Enlightenment mythology [see Bowers 2000, 56]), schooling remains the only official site of public instruction.

Bowers is alarmed that computers represent the lynchpin in the cultural crisis that threatens to destroy the very conditions of sustainability of the species. He summarizes these conditions:

The subjectivity of cyberspace expresses all the attributes of the individualism of the Industrial Revolution: a natural attitude toward being a rational, self-determining individual who looks on both past and present in terms of immediate self-interest; a view of the environment as a technological and economic opportunity; an expectation that change leads to a personal enlargement of material well-being; and a view of the world’s other cultures as evolving toward the rootless individualism that can easily adapt to the rapidly changing routines of technologically intensive modes of production. (Bowers 2000, 41, 106)

Others would suggest that cyberspace reconfigures subjectivity, dispersing the cult of individualism, rendering rationality senseless, even unrecognizable in its modernist manifestations (see Pinar 2004). The commodification of the natural environment, the obsession with material self-advancement, and cultural imperialism are hardly new and, as Pierre Lévy’s (2000) reverie suggests, cyberspace may well prove not altogether hospitable.

Bowers’ expression of skepticism toward the current obsession—he terms it “addiction” (see 2000, 177)—with computers in schools, with what, in a different context, Christopher Lasch (1978, 217) termed a “grandiose vision of a technological uto-

pia” is strong. Likewise, Ted Aoki [Pinar and Irwin, in press] speaks of our “intoxication” with technology and science. Historian Christopher Lasch (1984, 33) worried that: “By holding out a vision of limitless technological possibilities—space travel, biological engineering, mass destruction—it removes the last obstacle to wishful thinking. It brings reality into conformity with our dreams, or rather with our nightmares.”

Whatever its complex consequence will be, clearly an explosion in technology applications for the classroom and in technology education has occurred. Saettler (1990) situates this development historically. The excitement over computers in the classrooms followed like “explosions” of interest in the curricular possibilities of educational radio, film, slides, and television. The use of computers in classrooms offers many possibilities and raises many questions. Some have regarded technology as a rescue from the “ingrown, closed system” of curriculum theory (Pratt 1978, 149). Perhaps Peter J. Fensham (1992) summarized best the current state of the technology education: “Technology education as a component of the curriculum in its own right is far too new for its major influences to be identified in any adequate way. . . . The situation with technology education at the moment is still very fluid” (p. 815).

SUPERVISION, EVALUATION, AND CURRICULUM

The evolving relationship between supervision and curriculum has been established in several synoptic textbooks, including such works as *Emerging Patterns of Supervision: Human Perspectives* (Sergiovanni and Starratt 1971), *Supervision for Improved Instruction* (Lewis and Miel 1972), *Supervision in Education: Problems and Practices* (Tanner and Tanner 1987), *Supervision for Today’s Schools* (Oliva 1989), and *The Central Office Supervisor of Curriculum and Instruction: Setting the Stage for Success* (Pajak 1989). As Dianne Common and Peter Grimmett (1992) have observed: “The relationship between curriculum and supervision is a fragile one; its negotiation can proceed from the exercise of legal-rational authority and procedural correctness, or it can proceed through mutual reflection and reconstruction. The former leads to estrangement, the latter to rapprochement. The choice is ours, researchers and practitioners alike” (p. 225).

Influential in curriculum development, supervision has been an integral part of curriculum study for decades. For example, an emphasis on the leadership role of the supervisor in guiding curricular practices is found in *Supervision: A Guide to Practice* (Wiles and Bondi 1980). The 1992 Association for Supervision and Curriculum Development (ASCD) Yearbook, entitled *Supervision in Transition* (Glickman 1992), insists that educational leadership and supervision must be shared, decentralized, and empowering for teachers in order to be effective. Contributors to the yearbook promote peer coaching, teacher mentors, collegial support, and peer assistance models of supervision with explicit suggestions for teachers to assume decisionmaking leadership roles.

Perhaps no scholar has considered more carefully the significance of hermeneutics for supervision than Noreen Garman (1990). Relying on Edmund Husserl and Paul Ricoeur, Garman has outlined the “embedded theories in the taken-for-granted events of clinical supervision” (1990, 212). She points to the need for a language for teaching in order to “articulate supervisory practice” (p. 212). Much of contemporary supervisory practice, she notes, “is now tailored to meet administrative convenience and is couched in ‘scientism’ rather than sound supervisory practice based on moral justification” (p. 212). Garman’s hermeneutic approach requires a suspension of the administrative interest for the sake of “generating hermeneutic knowledge” (p. 212).

Since the 1960s, George F. Madaus and Thomas Kellaghan (1992) tell us, curriculum evaluation has experienced enormous growth, as has assessment in school classrooms. Evaluation, like all major terms in the curriculum field, enjoys multiple definitions (Madaus, Scriven, and Stufflebeam 1983; Murphy and Torrance 1987; Worthen and Sanders 1987; English 1988; Weiss 1989), but Madaus and Kellaghan report that it is Ralph Tyler’s definition of 1949 that has enjoyed “considerable influence” (1992, 120): “The process of evaluation is essentially the process of determining to what extent the educational objectives are actually being realized by the program of curriculum and instruction” (Tyler 1949, 105–6; Madaus and Kellaghan 1992, 120). Dissatisfaction with the Tylerian definition led, in the 1970s, to a variety of evaluation approaches. Indeed, the 1981 Joint Committee on Standards for Educational

Evaluation defined evaluation broadly as “the systematic investigation of the worth or merit of some object (program, project, or materials)” (p. 12). Evaluation is the broad category while assessment is subsumed within it. Within assessment is measurement, the most narrow form or subset of evaluation.

Despite the variety of approaches to evaluation, the term has become increasingly important in political debates regarding the progress of education in the United States and worldwide (see Pinar et al. 1995; Fuhrman and Malen 1991). The term “educational indicator” (developed to parallel existing terms such as “economic indicators” and “social indicators”) has been employed to summarize the current conditions of the educational system nationwide (Johnstone 1981; Oakes 1985). Presumably, weaknesses and progress in student achievement in individual subject areas are detected and reported. Such evaluation reports can be expected to become even more important as national political pressure builds to increase test scores of American students (Madaus and Kellaghan 1992). Specific information regarding student achievement, as measured by standardized examinations, is housed in the National Center for Education Statistics. Such data are increasingly employed by politicians who use measures of educational decline or progress to advance their own agendas (Pinar 2004).

Evaluation in general and testing in particular accompanied the social efficiency movement of the 1920s (Pinar et al. 1995). Many school systems began to make surveys of rates of expenditure, dropout rates, promotion rates, and tests of achievement in the various basic skill areas, such as arithmetic, spelling, and writing (Madaus and Stufflebeam 1984). Such tests functioned also as curriculum evaluation, although during the 1920s a shift occurred, one from employing tests to evaluate curricula to employing tests to assess teachers and school systems as a whole (Madaus and Kellaghan 1992). Another shift occurred a decade later, as tests were employed primarily to make assessments of the progress of individual students, for purposes including the assignment of grades, diagnosis of learning problems, and tracking (Cronbach 1983). Following World War II, standardized tests became more available and more frequently used to measure student progress. Also during this period, Tyler popularized the notion and practice of objectives (Tyler 1949). In the postwar period, taxonomies were developed, designed to assist educa-

tors in the writing of objectives (Bloom 1956; Krathwohl, Bloom, and Masia 1964). While the Tyler rationale for curriculum development advanced a triangle of educational concerns—objectives, learning experiences, evaluation—by the 1960s it became a rationale for test development (Madaus and Kellaghan 1992). While Tyler regarded evaluation as derived from curricular objectives, by the 1960s many considered that it was the test itself that came to determine the curriculum (Travers 1983). Under the Bush administration, teaching to the test has, in effect, become the law (Pinar 2004).

While historical antecedents are important, and particularly the seminal influence of Tyler’s rationale (see Walberg 1970), contemporary curriculum evaluation is sometimes dated from 1967, with the appearance of Michael Scriven’s article “The Countenance of Educational Evaluation” (Popham 1975). Popham’s dating seems consistent with a later annotated bibliography (Fraser 1989); thirty-nine book titles listed were published after 1967. Why the sudden expansion of the field in the late 1960s? Most commentators link it with the governmental need to evaluate the massive curriculum projects associated with the “curriculum reform movement” of the early 1960s sponsored by the Kennedy administration (Fraser 1989; see Pinar et al. 1995).

Despite the general, if not vague, definitions of the concepts of quantitative and qualitative, and their function as umbrella terms of convenience, they have become widely accepted in the scholarly literature. Quantitative research refers to the use of the techniques of randomized experiments, quasi-experiments, multivariate statistical analyses, sample surveys, and so on. In contrast, qualitative methods include ethnography, case studies, in-depth interviews, and participant observation. In the 1970s, methodological tolerance was an idea, not the reality. In the lead issue of a new journal, *Evaluation Quarterly*, P. Rossi and S. Wright (1977) asserted: “There is almost universal agreement among evaluation researchers that the randomized controlled experiment is the ideal model for evaluating. . . . If there is a Bible for evaluation, the Scriptures have been written by Campbell and Stanley” (p. 13). Quantification is legislated in research funded by the Bush administration’s *No Child Left Behind* program.

In addition to Eliot Eisner’s criticism (1971a) of the dominance of quantitative methods and the

“scientific” mindset, David Hamilton advanced five criticisms of quantitative evaluation. His first criticism intersected Eisner’s, namely that quantitative evaluation directs attention away from important aspects of educational programs that are not easily measured. Second, Hamilton noted that the interests of the evaluator and curriculum developer can conflict when the evaluator works to tighten experimental control by discouraging redevelopment in programmatic midstream. Third, quantitative evaluation tends to emphasize the interests of administrators and researchers rather than the practical questions of interest to teachers. Fourth, unplanned consequences are ignored in favor of intended outcomes. Finally, quantitative evaluation tends to overlook that consensus on curricular aims is unlikely (Hamilton 1976; Fraser 1989).

Eisner borrowed the concepts of “connoisseurship” and “criticism” from the arts to broaden and refocus the concept and practice of curriculum evaluation. The two concepts are intimately interrelated. Eisner explains: “Connoisseurship, generally defined, is the art of appreciation. It is essential to criticism because without the ability to perceive what is subtle and important, criticism is likely to be superficial or even empty” (1985, 219). The distinction between the two concepts is in function: to act as a connoisseur is to appreciate; to act as a critic is to disclose. Eisner explains further: “Connoisseurship is a private act. . . . It does not require either a public judgment or a public description” (1985, 219).

After the curriculum has been developed, that is, after the phases of policy, planning, design, implementation, embodiment in material form (including in print and/or technological forms), then supervised and evaluated, what is still missing in the effort to understand curriculum as institutional text? It is the experience of teaching and learning. In classrooms teachers and students encounter the materials that have been developed, and it is in this encounter that curriculum becomes mediated and symbolic social experience. In classrooms, as Philip Wexler (1992) might say, curriculum becomes a social practice. To sketch the relation between curriculum and teachers, we move to a brief discussion of pedagogy and then to a brief review of textbooks, one major medium through which the teacher-student encounter occurs.

CURRICULUM AS SOCIAL PRACTICE

Understood institutionally, curriculum and pedagogy do appear to be separate domains, and their relationship is often construed as linear (Doyle 1992). Institutionally, curriculum defines the knowledge to be taught; pedagogy is conceived of as the delivery system (Beauchamp 1961; Foshay and Foshay 1980). This view has a specific history (Kliebard 1986). As we saw in the section on implementation, teaching is commonly characterized as the means by which curriculum is implemented. Teaching came to function as a means of administrative control over the education of American youth.

In contrast to the study of curriculum, the study of teaching has remained close to academic psychology. This meant, in the 1930s, that research on teaching became infused by the behavioral psychology of Edward L. Thorndike and C. H. Judd (see Pinar et al. 1995). Research on teaching shared in the growing prestige of psychology as the core discipline of educational research. By the 1980s, findings from research on teaching became a source of authority independent from curriculum for prescribing and controlling quality in teaching practice (Doyle 1992). Put bluntly, much of research on teaching has been concerned with how to get teachers to do what others (usually administrators) want them to do (Pinar 2004). Teaching is viewed largely as a process of disciplining and controlling students so that they can learn what the experts have stipulated. In this institutional view of teaching, the curriculum becomes invisible (Doyle 1992).

This view is changing. No longer is teaching viewed exclusively as applied psychology. The “depsychologizing” of teaching has invited multidisciplinary research, including work grounded in anthropology, sociology, and linguistics (Cazden 1986; Doyle 1978; Erickson 1986). Some have attempted to elaborate a view of pedagogy and learning grounded in critical theory, especially the work of Jurgen Habermas (Young 1988). Additionally, curriculum tends to be viewed as an important aspect of teaching (Shulman 1986). Miriam Ben-Peretz (1990) links the two: “To sum up: teachers are encouraged to see their major role in the partnership of curriculum development as that of informed and creative interpreters who are prepared to reflect on their curriculum and to reconstruct it” (p. xv). Others, how-

ever, disagree on this point: “teaching is unlike curriculum development” (Martin-Kniep and Uhrmacher 1992, 262).

W. Doyle (1992) reviews work in two important areas of teaching research: so-called content pedagogy and pedagogical content knowledge. Content knowledge refers to “attempts by cognitive scientists to understand knowledge representations and comprehension processes in various subject matter domains” (Doyle 1992, 497). These attempts are founded in attention to the learner’s viewpoints or “paradigms” as they relate to comprehension of a particular unit of content (Marton 1989). “The ultimate aim,” Doyle tells us, “is to generate content-specific theories of how people handle particular contents, rather than general psychological theory applicable across content domains” (1992, 497). This research tends to appreciate the situatedness of learning (Lave 1988; Kincheloe and Steinberg 1993; Kirshner and Whitson 1997).

The concept of pedagogical content knowledge is embedded in a larger view of teacher education and its knowledge base. Lee Shulman (1987) elaborates the following categories of teacher education’s knowledge base: (1) content knowledge (i.e., the academic disciplines); (2) general pedagogical knowledge, with special reference to those broad principles and strategies of classroom management and organization that appear to transcend subject matter; (3) what Shulman terms curriculum knowledge, with particular knowledge of the materials and programs that serve as “tools of the trade” for teachers; and (4) pedagogical content knowledge, that special mix of content and pedagogy that is uniquely the province of teachers, their own particular form of professional understanding which includes knowledge of learners and their characteristics, knowledge of educational contexts (ranging from the workings of the group or classroom, the governance and financing of school districts, to the character of communities and cultures), and knowledge of educational ends, purposes and values, and their philosophical and historical grounds.

A major statement on the nature of teaching is Philip Jackson’s (1986) study of the “practice of teaching.” That teaching is more complex than commonly assumed is one of his main themes. He begins his study by questioning the public assumption that everyone knows how to teach, as long as the subject

matter is known. Knowing what to teach and knowing how to teach are quite different matters, he points out. With John Dewey, Jackson (1986) acknowledges that there are teachers who do wonderful work but do not conform to any specific methodology: “These naturally endowed teachers, we are asked to believe, are the ones who get by and even excel without formal training” (p. 9). That such individuals exist raises the question: are there any formal laws or rules of teaching? Being fair, impartial, and caring are all commonsensical attributes of a good teacher, he points out. However, common sense is insufficient.

In the face of such uncertainty, how can we judge what is “real teaching?” Jackson draws three conclusions. First, he insists there is no such thing as a behavioral definition of teaching and there never can be. The second is closely related to the first: our attempt to say when a person is or is not teaching is always an act of interpretation, a view not dissimilar from that of Eisner’s. The third conviction, one that follows from the first two, denies the possibility of our ever arriving at an enduring or universal definition of what it means to teach.

Acknowledging that, Jackson identifies three basic approaches to teaching: “the generic, the epistemic, and the consensual” (p. 89). He examines and rejects each approach, although he seems to privilege the consensual. Jackson (1986) asserts: “To put the argument in a nutshell, there is no such thing as ‘genuine’ teaching. There is only an activity that people call teaching, which can be viewed from a variety of critical perspectives” (p. 95).

Larry Cuban (1983) has asked how teachers have taught, and the answer he provides is a historical one. Consulting descriptions of 1,200 classrooms and 6,000 teachers, Cuban (1984) was able to produce composite sketches of mainstream teaching during several periods during the past century. “At the turn of the century,” he begins, “the prevailing form of teaching was teacher-centered. . . . Classes were taught in a whole group. Teacher talk dominated verbal expression during class time” (1983, 163). During the next period—1920s and 1930s—in urban schools in cities such as Denver, New York City, and Washington, D.C., and rural schools across the nation, Cuban found that the majority of elementary teachers continued to use pedagogical practices that emphasized large-group instruction, recitation, seatwork, and little student mobility. There were, he

reports, a substantial number of teachers (and not only in New York City where the Activity Program [1934–1941] was underway, and in Denver where successive school administrations nurtured progressive approaches) who experimented with the rearrangement of their classroom furniture, and with variegated grouping of children for instruction, with the use of projects that encouraged students to express themselves and move around freely in the classrooms. Cuban found some progressive practices were used and others were not, showing up without a predictable pattern in both rural and urban schools (for an antiprogressive view, see Ravitch 2000).

Although Cuban reports that progressive teachers were never a majority in any setting he studied, these teachers did represent substantial minorities in various districts. What did Cuban find in secondary schools? “If there appeared to be modest changes in elementary classrooms, that didn’t seem to be the case at the high school level. . . . What occurred in most high school classrooms were mere traces of progressive practice” (Cuban 1983, 164).

Cuban (1983) did find exceptions, as we would expect given the influence of the Eight-Year Study (1933–1941). For example, Denver’s five high schools that participated in the Eight-Year Study established experimental classes in each of its schools (see Pinar et al. 1995). Cuban reports that never more than one-quarter of the student body and faculty were involved in these progressive educational experiments; their classes were quarantined in a separate wing of the building. The last vestiges of curriculum changes that grew out of the Eight-Year Study in Denver had disappeared by 1954, a time when the “life adjustment movement” was under sustained attack by conservatives such as Arthur Bestor.

By the beginning of World War II, Cuban tells us, the common patterns of instruction included the following: (1) employing the entire class as the primary teaching vehicle, (2) use of the question-answer format, (3) a teacher monopoly of classroom talk, and (4) a general reliance upon the textbook that has been basically undisturbed, except for those progressive experiments mentioned earlier. Cuban then moves to the years after 1965 when another reform impulse resulted in new ideas, additional money, and new faces in public schools across the country. Informal education, open classrooms, and alternative schools were among the innovations tried to varying extents

in different locations. What were the results? These efforts at innovation “produced a composite portrait of school teaching not unlike that of previous generations: teachers talking most of the time to the entire class, listening to student answers, assigning portions of the text to the class for homework—the meat and potatoes of instruction” (1983, 164).

The last period Cuban surveys, the present one, begins in 1975. Since that date, he reports that the dominant pattern has continued to be teacher-centered instruction with some small percentage of elementary teachers developing hybrid versions of what twenty years ago were characterized as open classrooms. In high school classrooms, little variation from the dominant teaching pattern is discernible.

In a review of research on textbooks, Richard L. Venezky (1992) notes that a textbook functions both as a cultural artifact and as a surrogate curriculum. He employs the term *intertextuality* to refer to a textbook’s relationship to preceding textbooks, and the term *validation* to refer to processes of legitimation. Historically, Venezky identifies three major attempts to study the general character of textbooks and their use in schools. The first was published in the Thirtieth Yearbook of the National Society for the Study of Education, which focused exclusively on the preparation and selection of textbooks (Whipple 1931; Venezky 1992). In general, textbooks were praised in this early publication (Venezky 1992). A second effort proceeded under the leadership of Lee Cronbach at the University of Illinois as the Text Materials Study, summarized in *Text Materials in Modern Education* (Cronbach 1955). A third effort has been published as *Textbooks and Schooling in the United States* (Elliott and Woodward 1990).

Venezky (1992) cites three sources for control of textbook content: federal and state government, publishers, and society. Venezky suggests that the influence of federal and state governments has been relatively weak. He writes: “Almost by default, the primary influence over textbook content has been left to two groups: the publishers and society, as represented both by broad social movements and by special interest groups that act directly upon the schools and publishers” (Venezky 1992, 444). Textbooks are profitable, grossing well over \$2 billion a year (Squire and Morgan 1990). One question concerns the extent to which textbooks are a function of business as opposed to educational interests. Over

twenty-five years ago John Goodlad (1979, 34) observed that business exercised a strong influence: "In fact, it is fair to say that the ends and means of curricula frequently are determined by publishers and not by the elected representatives of the people, although the process is a cyclical one, with the identification of who is influencing being exceeding difficult." Relatively little is known about how the textbook industry operates, despite several conjectures (Apple 1986; Luke 1988; Venezky 1992).

Historically, special interest groups, usually on the political right, have influenced the ideological content of textbooks (see Zimmerman 2002). Their success illustrates the vulnerability of schools to political pressure (Venezky 1992). Constitutional issues, including Supreme Court decisions regarding textbooks and censorship issues in particular, have been carefully reported and analyzed by Tony Whitson (1991). One of the most famous cases occurred in Kanawha County, West Virginia, where conservative parents fought to keep "humanism," "socialism," and other threats to their fundamentalist beliefs out of school textbooks (Moffett 1988; Watras 1983). Their victory, and others like it, has had the effect of tightening a conservative noose around an already conservative textbook industry. Commenting on another issue (that of school reform), one professional association has noted: "A danger arises when a minority group works aggressively to impose its beliefs on a slumbering—or misled—majority" (Willis 1992, 4).

An 1895 biology textbook was the first to mention the theory of evolution, while many textbooks ignored the subject (Skoog 1979, 1984; Rosenthal and Bybee 1987; Venezky 1992). In 1920 the state of Oklahoma outlawed textbooks that mentioned evolution, and soon after the state of Tennessee forbade the teaching of evolution generally (Venezky 1992). Following that law was the famous Scopes trial held in Dayton, Tennessee, in 1925. A high school teacher, John Thomas Scopes, had agreed to test the Tennessee law banning the teaching of evolution. William Jennings Bryan, three-time Democratic candidate for president, argued for the Tennessee statute, while Clarence Darrow defended Scopes. The prosecution won the case, only to have the decision reversed at the state court level on a technicality. The statute forbidding the teaching of evolution remained on the books (Venezky 1992).

Not long after the Scopes trial, Mississippi and Arkansas passed similar legislation, forbidding the teaching of evolution. The Arkansas law, known as the Rotenberry Act, reached the Supreme Court in 1968, at which time it was judged unconstitutional to forbid the teaching of evolution in public schools and universities (De Camp 1969). Tennessee responded in 1973 with a law requiring that equal instructional time be given to the Genesis version of human creation. The California Board of Education had taken a similar position in 1969. The "equal-time" Tennessee law was declared unconstitutional and repealed in 1975. The California board reversed itself as well (Venezky 1992). Currently, those who object to the teaching of evolution are not primarily residents of Appalachia (as in the case of Kanawha County, West Virginia) but residents of areas such as southern California and urban Texas (Nelkin 1976). The growth of right-wing influence, starting with the election of Richard Nixon to the Presidency in 1968, has been largely uninterrupted, and textbook series—such as MACOS (an anthropology-based social studies curriculum; see Pinar et al. 1995)—which were not sufficiently sensitive to the special ideological interests of the right-wing, have suffered (Conlon and Dow 1975; see also Good, in press).

Students comprise the themes of research in several sectors of curriculum scholarship, especially in the phenomenological and autobiographical-biographical traditions (see Pinar et al. 1995). However, in a recent systematic review of "students' experience of the curriculum," Frederick Erickson and Jeffrey Shultz (1992) note: "Neither in conceptual work, nor in empirical research, nor in the conventional wisdom and discourse of practice does the subjective experience of students as they are engaged in learning figure in any central way" (p. 466). Perhaps not in a central way, but students have occupied important places in curriculum discourses from the beginning, from early twentieth-century child study. As Erickson and Shultz point out, that "place" has tended to be a passive one, as their portrait of the curriculum as "school lunch" indicates.

Erickson and Shultz (1992) employ the image of school lunch to convey what they see as the mainstream view of curriculum and pedagogy in relation to the student. In this image the teacher's job is to take packages of "mind-food" from the freezer (the written curriculum), thaw and prepare them (instruc-

tion), and monitor students' eating until the food is gone (classroom management for maximization of time on task) (Erickson and Shultz 1992). This view of the student's role in contemporary education is similar to that of Freire's (1968), in which the student is viewed as the repository of banking deposits (i.e., information). In both images the student is passive, and the teacher's role is sharply circumscribed.

A highly suggestive study of student experience is Philip Wexler's (1992) ethnographic research on school life and identity, entitled *Becoming Somebody*. With the assistance of Warren Crichlow, June Kern, and Rebecca Martusewicz, Wexler (1992) represents the "different lifeworlds and . . . dynamic organizational economies that generate and sustain diverse understandings and aspirations" (p. 8) in three upstate New York high schools. Wexler observes: "Each student contributes to his own self-production by the interactional labor that he performs" (p. 10). One school is urban, one is middle class, and one is working class.

Wexler concluded that in different ways, the self is under assault in each of the three high schools he studied, a subset of "macrostructural historical and socioeconomic processes" that become institutionally enacted with the organization of school life "as a dynamic for controlling and dampening self-expression for the sake of population control" (1992, 126). Wexler regards this process as a "social emptying of the self," against which the students fight (p. 126). One strategy is withdrawal from official school life and an intensification of peer experience. However, this strategy is doomed to fail. Wexler concludes: "The struggle for self activates powerful and expressive peer networks that decentralize the self, as the best, though ironically, self-defeating form of self-defense" (Wexler 1992, 127).

The extra-curriculum refers to those activities and events sponsored by the school that occur outside the formal school curriculum. Extracurricular opportunities include sports, music (such as marching band, orchestra, and chorus), student publications (such as newspapers and yearbooks), drama, debate, student government, student clubs (such as future farmers, future teachers, etc.), and assemblies. Sometimes these activities have been viewed negatively, or as unconnected to the academic curriculum. A more neutral set of terms, including the third curriculum, the informal curriculum, and most recently

co-curricular activities has been developed (Berk 1992). This final term has been espoused by those educators and other students and practitioners of curriculum who regard these activities as an essential aspect of school experience.

William F. Pinar

THE INTERNATIONALIZATION OF CURRICULUM STUDY

While many scholars (for instance, see Schubert 1991; Rogan and Luckowski 1990; Rogan 1991) have called for attention to international dimensions of curriculum study, not until the publication of *Understanding Curriculum* in 1995 did a major synoptic textbook devote a chapter on the subject (see Pinar et al. 1995). This omission is somewhat understandable, given that curriculum studies is very much embedded in national culture (Pinar 2003). Moreover, the effort to understand curriculum internationally is too large and too complex an undertaking to be surveyed comprehensively in one chapter. Despite this problem, some attention is necessary. There are two professional associations for curriculum specialists interested in international issues: the World Council for Curriculum and Instruction (Overly 1988, 2003) and the International Association for the Advancement of Curriculum Studies (www.iaacs.org).

Curriculum developments are not sealed airtight within national boundaries. Just as economic, political, and ecological phenomena increasingly ignore national boundaries, so do educational issues. For example, recently there has been an intensification of "whole language" versus phonics reading programs in the United States, the former committed to the integration of the language arts and reading throughout the curriculum with an emphasis on experience and inquiry, the latter concentrating on sound and drill. The "whole language" approach finds its roots in the language arts curricula of New Zealand where children learn to decode words in context as they read (Burns 1991).

A wide range of educational planners, consultants, professors, and students have an interest in the international dimensions of curriculum. Businesses with

international trade interests, global industrial entities, missionaries and religious organizations, political scientists, and foreign aid agencies all monitor international educational developments. Politicians and governmental officials utilize educational trends and issues to promote specific agendas within their own spheres of influence (Feinberg 1993). The publication of *A Nation at Risk: The Imperative for Educational Reform* (NCEE 1983) in the United States rationalized aggressive and conservative educational reform based on the allegation that student achievement in the United States was deficient when compared to students in other nations, particularly economic competitors Japan and Germany. Such international comparisons fueled a decade of political rhetoric and educational reform in the United States. (As we saw in entry one, such arguments have been used before: the Sputnik event in 1957 prompted national curriculum reform in the early 1960s.)

Scholarly interest in the study of curriculum internationally is not a recent phenomenon. Internationalism—then linked with political movements on the Left—was advocated by progressives like George S. Counts and Theodore Brameld (1904–1987). Counts's major statement—*Dare the Schools Build a New Social Order?*—was written after returning to the United States from a trip to the Soviet Union in 1930. As Counts witnessed the deepening social crisis that accompanied the Great Depression (a condition he regarded as inexcusable), he worked to awaken educators to their investment in social and cultural reconstruction. Counts's central thesis was that modern science, technology, and industrialization had created social inequalities which education must labor to correct (1929, 1951, 1962; see also Perlstein 2000).

Global education communicates those problems and issues that cut across national boundaries. Particularly, global educators are interested in the interconnectedness of systems—ecological, economic, political, technological, religious, cultural, and educational. One widely accepted definition of global education states: “Global education involves perspective taking: seeing things through the eyes and minds of others—and it means the realization that while individuals and groups may view life differently, they also have common needs and wants” (Hanvey, quoted in Tye 1991, 5). Like Counts and Brameld, Robert Hanvey and Kenneth Tye encourage an interdiscipli-

nary approach that emphasizes current events, worldwide concerns, cross-cultural exchanges, cooperative programs, and international order (Tye 1991).

With increasing numbers of immigrant children in many developed nations, expanded opportunities for education in South Africa, Eastern Europe, and the republics of the old Soviet Union, increased English as a Second Language (ESL) instruction in the United States, and the effects of mass media on an ever “shrinking” world community, the international classroom is a reality, whether intended or acknowledged as such. Global education aspires to provide models of this interconnectedness, interdependence, and interrelationship of world cultures in an educational effort to promote cooperation and progress (Tye 1991).

Global education has been criticized from the right (see, for instance, Kah 1991). But even politically conservative scholars, such as Diane Ravitch, assert that “we have much to gain by learning about other cultures and . . . they have much to gain by learning about ours. Learning about other people does not require us to relinquish our values” (Ravitch 1989, 20–21). Ravitch and others (see, for instance, Kenneth Tye 1991) argue that changes in educational programs, state guidelines, and textbooks should place more emphasis on world cultures, world history, and geography.

Until recently, most North American scholarship devoted to understanding curriculum internationally occurred in Canada. In “The International Classroom,” Terrance Carson (1990) contends that Canadian classrooms have become international, not because of any plan but due to the circumstances of the present age. Canadian classrooms have become internationalized for several reasons: television has brought global events into Canadian homes and classrooms, new immigrants have arrived from Vietnam, El Salvador, Rumania, and Lebanon who speak neither of the official Canadian languages (English and French) and, as a result, ESL (English as a Second Language) programs have proliferated throughout Canada. Carson asks two significant questions regarding the emerging international classroom: how are we to respond to the cultural “other” who is already in our midst?, and how will we learn to live humanely in a world that is in a period of transformation? This double issue of the globe in the classroom and the classroom in the globe reveals that the local school becomes a focus of international cur-

riculum experience. Carson contends that teacher education programs must encourage educators to interpret and act in accordance with the daily realities of their own classrooms rather than perpetuate an over-reliance on the authoritative voice associated with the modern age. He concludes his study by juxtaposing a postmodern classroom that moves from difference to identity through the development of an ecumenical and ecological peace culture against the modern classroom that moves from difference to standardization through the development of an “ego-logical” war culture.

Writing “Of Literacy and the Curriculum in Canada,” John Willinsky (1992a) argues that literacy education in Canada ought “to afford the young a means of not only mastering the skills of reading and writing, but of exploring and participating in the world of text” (p. 278). Willinsky’s (1998) most recent scholarship exhibits postcolonial influences, and is focused on a curriculum for thinking about the implications of five centuries of Western imperialism. He identifies the position of the tourist as indicative of the colonial gaze of the Westerner; he is committed to redirecting it inward. Willinsky’s award-winning scholarship is a strong example of the internationalization of curriculum study.

Ted Aoki brings a phenomenological view to bear on issues of intercultural education, specifically as these surfaced in the internationally attended graduate program in curriculum studies at the University of Alberta. Revealing his characteristic pedagogical movement from the abstract to the concrete, from the theoretical to the anecdotal, here from the local to the global, Aoki conceives of graduate study as “a conversation of mankind” in a “trans-national situation” (in Pinar and Irwin, in press).

Speaking with students who have come to Alberta from beyond North America, Aoki is reminded of the instrumentality of his assignment as an administrator and of the centrality of conversation in the process of education. In this intercultural educational experience, Aoki worries about the erasure of originary identities. “To remind ourselves of who we are in conversation,” he suggests to these students, “I ask that we turn the conversation to ourselves.” He poses to them what might be the central curriculum question in an era of globalization: “How will you know that what we consider ‘good’ here is ‘good’ in your homeland?” (in Pinar and Irwin, in press).

An organizational and intellectual movement underway supporting “the internationalization of curriculum studies” may internationalize the study of curriculum in the United States. While this movement accompanies and is no doubt stimulated by larger forces of globalization (see Held et al. 1999), it tends to be suspicious of the cultural homogeneity and economic centralization globalization threatens. Inspired by the work of Aoki, Carson, and Willinsky, among others (see, especially, the work of David G. Smith [2003]), Americans have established a U.S. affiliate (<http://aaacs.info>) of the International Association for the Advancement of Curriculum Studies, published the first international handbook of curriculum research (Pinar 2003), and have recommended the inclusion of international studies in curriculum studies programs (see Pinar 2004, appendix). Through internationalization, historicization, and theorization, the study of curriculum will become more developed, and its scholarly production more sophisticated.

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INSTRUCTION

Arguably, instruction is the key process in education. At the heart of educational institutions, it is the process around which schools are formed and educational legislation passed. Ironically, instruction simultaneously represents both the most discussed and, given its many layers, the least understood domain in education.

Examples of a few ways instruction may be discussed and examined include issues of purposes, teaching, learning, students, teachers, policy, specific communities, social issues, and subject matter content. Further, each of these approaches to the topic is value laden and embodies a range of diverse and often conflicting perspectives. Yet a working and relatively explicit definition of instruction is essential to educators as this informs how they plan and enact learning processes. Just as important, a definition of instruction is important to noneducators, as it informs how they understand these processes.

One way to begin to understand the topic of instruction is through its relationship to the topic of curriculum. Two broad views of this relationship exist. One perspective holds that instruction and curriculum are closely related but separate realms, forming a curriculum-instruction dualism (Tanner and Tanner 1980, 30). In this dualism, instruction represents educators' implementation of subject matter content while curriculum represents the content itself and educators' initial planning for its implementation. Thus, this view emphasizes the *processes* that teachers use to deliver the curriculum and reflects a view of instruction as a method of content implementation. Implying a separation of instruction from content, this dualistic view then casts teachers as implementers and not creators of curriculum (Connelly and Clandinin 1988). One advantage to formulating curriculum and instruction into this dualism is that the separation allows for "research in instruction and the technology of instruction" (Tanner and Tanner 1980, 30).

However, an alternate view holds that instruction is an integral part of a broader curricular process. In this process, curriculum is a dynamic consisting of subject matter, student, teacher, and learning milieu (Lampert 2001; Schwab 1962; Clandinin and Connelly 1992). Teachers play a role in both the formulation of curriculum and its enactment, thus nullifying any duality between these two domains. This approach also reformulates the conception of teacher as something inseparable from the curriculum (Clandinin and Connelly 1992; Zumwalt 1988). In this view of curriculum and instruction, the distinction between material and methods, curriculum and instruction, is erased (Clandinin and Connelly 1992). The interactions of the various contexts within this dynamic create a lived curriculum that emerges at least as much as it is planned. Teachers do not "deliver" this curriculum—they, along with their students, experience it, becoming its participants (Clandinin and Connelly 2000). In this view of instruction, the social aspects of the curriculum are at least as important as those related to classroom books and materials.

In such an approach, teachers guide students as they discover or even create content. For example, in a middle-school science class, students may follow the scientific method to learn about ecology. Facilitated by the teacher, students may raise their own hypotheses about the causes of pollution in a body of water, conduct an experiment to test their hypotheses, develop findings, verify their findings, and reach a tentative conclusion. Such an example reflects what is commonly called a "progressive" view of instruction, where the teacher adapts what she is doing to better engage her students.

Independent of the curriculum-instruction dualism debate, one way to try to establish patterns among the diverse range of assumptions, values, and approaches to instruction is to draw teaching-and-

learning frameworks from broader curricular orientations. A curricular orientation is a “distinct and conceptually separate” approach to what takes place in the classroom (McLeod 1985, 10). Orientations are helpful in supplying a conceptual lens to facilitate categorizing multiple classroom events, and the curricular orientation often guides the approach to instruction.

Elliot Eisner, for example, discusses five basic orientations to the curriculum. The first orientation is the “development of cognitive processes,” where the teacher attempts to develop students’ cognitive or thinking processes such as the ability to “infer, to speculate, to locate and solve problems, to remember, to visualize, to extrapolate . . .” (Eisner 1985, 62). Emphasizing process approaches to teaching and learning, this orientation assumes that thought patterns may be generalized from one situation to another if a student develops the relative cognitive processes. For example, this orientation assumes that if a student learns how to problem solve in a science class, this student can then use this problem solving ability in a similar situation, whether inside or outside of class.

A second curricular orientation that Eisner mentions is “academic rationalism.” Eisner explains that “this orientation argues that the major function of the school is to foster the intellectual growth of the student in those subject matters most worthy of study” (1985, 66). Proponents of this orientation include as permanent studies such subjects as reading, grammar, rhetoric and logic, mathematics, and the greatest books of the Western world (Tanner and Tanner 1980, 6). Students engaged in an “academic rationalist” curriculum would study exemplary intellectual products in mathematics, languages, science, and history. The goal of this orientation is for students to develop reason based on these great works in order to examine life critically and intelligently.

A third orientation within Eisner’s framework is “personal relevance.” This curricular orientation “emphasizes the primacy of personal meaning and the school’s responsibility to develop programs that make such meaning possible . . . The curriculum is to emerge out of the sympathetic interaction of teachers and students . . .” (1985, 69). This orientation stresses the importance of allowing children to pursue individual learning interests.

Eisner’s fourth orientation is “social adaptation

and social reconstruction.” This orientation assumes that the purpose of education is to serve and promote the interests of society. As J. McLeod mentions, this goal often has contradictory outcomes as it plays out in reality based on how it is assumed that education can best serve society:

Firstly, social adaptation is concerned with the preservation of the status quo. The opinion, that schools should directly address themselves to the development of basic competencies, which will increase the employability of students, is a current manifestation of this curriculum viewpoint. Traditional values, subjects and methodological approaches are stressed . . . The second aspect . . . is social reconstruction . . . In this instance, schools are institutions [that] are actively engaged in what they see as the improvement of society. Students are encouraged to question and challenge the values and structures of society. (McLeod 1985, 13–14)

The fifth orientation is “curriculum as technology.” Stressing accountability—often in relation to student standardized testing—the purpose of this orientation is to promote students’ learning of specific predetermined behaviors and outcomes. Under this orientation, a teacher would define the learning goals and then plan clear, manageable steps for students to reach them. For example, students might learn mathematics by watching a teacher presentation, practicing and repeating computational steps given in that presentation, doing follow-up practice sets as homework, and then taking a final test on the content. The individual steps in this process are eventually combined to support students in mastering larger learning outcomes (e.g., from learning how to solve a basic equation to becoming proficient in algebra).

Eisner’s framework allows for the conceptual grouping of classroom interactions. For example, a teacher delivering a moving lecture to her Honors students about the great books of Western civilization is reflecting an academic rationalistic perspective. A teacher whose approach is more emergent and who “teaches” by way of student-defined projects is reflecting a “personal relevance” curriculum. While in reality teachers often use multiple approaches, often one particular orientation predominates.

The definition of instruction, then, is complicated and multifaceted, reflecting a range of beliefs. Either

knowingly or unknowingly, all educators (and many educational policymakers and noneducators) take at least one and often multiple and shifting, contradictory positions about the meaning of instruction. These beliefs and values include those related to views of teachers, teaching, and learning, who should decide what takes place in classrooms, and the best relationship between schools and society. These beliefs in turn reflect foundational understandings and questions in education. One such issue, for example, is the relationship between schools, language, culture, and learning.

This chapter intends both to define specific aspects of instruction as well as explore some of the broader issues and questions that inform instructional approaches. The discussion has been organized to explore some of the exciting possibilities that teachers, students, and others encounter daily as they plan and interact in classroom situations.

The first entry of this chapter examines the history and description of different forms of instruction, loosely arranged from more direct and teaching-centered forms of instruction to more emergent, authentic, and learner-centered approaches. We first examine direct instruction, focusing on lecture, presentation, and demonstration. Next, we discuss guided instruction, focusing on the type found on the elementary level. Here we explore historical and newer approaches to guided reading and guided discovery instruction, including that of Socratic dialogue and discussion learning. After examining direct and guided instruction, we explore authentic instruction. In this entry we trace the evolution of authentic instruction, from its roots in the writings of Rousseau to its various carnations in American Progressive Education. Specifically, we discuss discovery learning, inquiry learning, problem-based learning, and contextual teaching and learning. This entry concludes with a discussion about individualized learning programs such as SRA (Science Research Associates), mathematics programs, and computer-assisted instruction (CAI). After delineating some of the dominant approaches to instruction, the chapter then examines many of the debates and issues found within these approaches.

After discussing different forms of instruction, we examine some of the philosophical views that inform types of instruction. For example, we examine traditional didactic and constructivist views

of instruction. This discussion is framed by many of the seminal debates in education over the last five decades. These debates include those focused on the economy (instruction for economic competitiveness or for democracy) as well as standards and accountability. Following this discussion, we then examine instruction in relation to other influential contexts that educators consider when planning and teaching. These contexts include child development, subject matter influences, classroom grouping approaches, and societal issues. The intent of this entry is to delineate the impact of these contexts on instruction. While educators may consider some of these contexts in a clear and explicit way, they often consider others in a much less understood but no less significant manner.

The Instruction chapter concludes with a discussion of more local contextual factors that impact instruction, including classroom management and planning. Ultimately, in this chapter we hope to capture and clarify some of the unfolding dynamics at play in instruction.

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HISTORY AND DESCRIPTION OF DIFFERENT APPROACHES TO INSTRUCTION

Traditionally, instruction has been thought of as the practice of teaching people something, instructing them about what something is or on how to do something. Examples of this abound in everyday life and in historical texts. In its most basic terms, we consider learning to involve someone telling us about something or showing us how to do something and practicing it until we can do it successfully by ourselves. Knowledge—here considered knowing how to do things—is passed down from generation to generation, father to son, mother to daughter.

Historically, fathers may have taught their sons how to hunt, how to farm, what certain tools were and how to use them. They took them along with them on the hunt and into the fields and showed them how to be a hunter. Similarly, mothers taught

their daughters how to cook and tend to the needs of the family by having them work alongside them, learning by watching and doing, gradually increasing the complexity of the tasks involved. These are examples of teaching involving declarative knowledge (what something is) and procedural knowledge (how to do something).

This “tell me and show me” approach to knowledge acquisition has been used throughout the ages outside of the home as well. “Apprentices” learned prescribed skills for their trade from master craftsmen through watching the “expert,” followed by arduous repetition until the apprentice had mastered that skill. Many trades are still taught this way. Plumbers and electricians, for example, are apprenticed to an expert until they have demonstrated their acquired skills. This transmission form of learning about something and how to do something specific, such as performing a task or a skill, has been successful in many instances and remains one of the most popular ways of instructing. This transmission model, sometimes referred to as a transference model with knowledge transferred from one person to another, is what many people think of when asked about how things should be taught. They think of teaching as giving, and of learning as taking.

At the same time, however, learning involves more than just learning how to do something specific. Learning (at least school learning) typically includes acquiring knowledge of ideas beyond just specific skills. Students are expected not only to digest these ideas, but also to use them to build their ever-broadening awareness of the world around them. They are expected to be able to learn to think and create as well as just do. Students are asked in school to develop conceptual knowledge that allows them to integrate multiple ideas and synthesize them into new ideas. Some claim this is not possible through a direct transmission model.

To facilitate student thinking about ideas, the learner is often asked to question beliefs and the foundations of ideas. This involves higher order thinking skills not included in the transmission model. Students are expected to do more than just recall information or summarize data. They are expected to analyze their thinking and ultimately justify it. The Socratic Method exemplifies this approach: Socrates engaged his students in lengthy discussions or dialogues about a topic, and then continued to probe the students’ thinking with ever-

deeper questions, challenging their ideas. This model allows for the combining of ideas and the formation of new ones.

As students develop new ideas through this intimate process, their thinking may be transformed. Hence, this is often referred to as a transformational model of learning. It is a complex process that requires a skilled teacher—one who can justify his own thinking and help others with the process of analysis, synthesis, and their own evaluation of ideas. This skill is not easily taught or learned. As this often involves more abstract thinking than the concrete learning of skills, this form of instruction is less common than the transmission model and has historically been used mostly at the university level. The transformation model has typically been used on a limited basis in the elementary or even high school years where skill learning has often been a priority. This is an issue that will be discussed later in this chapter.

Through the years, the number of approaches to instruction, and the specific strategies within them, has greatly expanded as we have learned more about how people learn and different learning styles. In this chapter, we address some of the broader categories of approaches to instruction, from the traditional use of direct (transmission/transference) instruction to guided instruction and authentic (transformational) instruction and, finally, individualized instruction (which may include a combination of approaches).

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DIRECT INSTRUCTION

Direct instruction has historically been the most prevalent approach to instruction within many schools. Direct instruction—the transference of ideas and skills from teacher to student—is often exemplified by the lecture method. Johann Freidrich Herbart (1776–1841) codified the method into five discrete steps of instruction still used today: (1) preparation or motivation of students for the information about to be transferred; (2) presentation or summary of what this information to be transferred is; (3) association of this

new information to the knowledge assumed previously known by the students; (4) generalization of ideas, rules, principles to be learned through this instruction; and (5) application of these ideas to specific instances (Ornstein and Hunkins 1998).

In a lecture or recitation, the teacher addresses a group of students with a prepared script of information to be transferred. This is typically a passive form of learning by the students. The teacher transmits the information and the student receives it. Because of the lack of interaction between the teacher and students, lectures are regarded as one of the more economical forms of teaching and knowledge transfer. Lectures require only one teacher and can include an audience of students numbering several hundred. The onus is on the students to absorb what the teacher is transmitting.

Direct instruction can also be an effective means of transferring great quantities of information, which the students will process on their own at a later time. A properly structured lecture can highlight the important aspects of a topic and help the students make the necessary connections to frame the topic within their own schemas. It is important to note, however, that lectures are not typically contextualized or personalized, but are purposefully general in nature. They are not designed for one specific audience other than that they may be tailored to a certain level of understanding of the topic and may be framed within a series of lectures related to one another. A lecture is designed to fit the instructor's perspective of appropriate structure and organization of ideas, not that of each of the students. Within a lecture, there is little to no opportunity for questioning of the teacher or for pauses to process certain concepts. The pace and direction are controlled by the teacher.

The direct instruction approach also includes strategies that are less formal than the lecture model. For instance, direct instruction is often used when introducing new material and ideas to students. It may be utilized as a method for one particular portion of a given lesson or unit. This is what many refer to as the "teacher talk" part of a lesson. It is often declarative or procedural in nature. The teacher, standing before the class, introduces a new idea by telling the students about the idea and related information, connecting it to what they already know or have learned, helping them frame their ideas and giving them instructions about how they will

proceed with their learning. This teacher talk or presentation strategy differs from the traditional lecture model in that the teacher is connecting the information transferred directly to the experiences of the students. With traditional direct instruction, the teacher is not expecting the students to create anything new other than to be adapting their own schemas to this new information.

As an example of the presentation strategy, imagine a fifth grade social studies lesson introducing the concept of global exploration. A teacher may introduce the concept by talking to the students about different explorations they may have been involved in personally—exploring a museum or their backyards, for example. They might then connect these new ideas to what was most recently taught within this subject, possibly the study of "the old world." The teacher would then connect this idea of exploring to discovering new territories. The class might then review various places throughout the world that have been explored and by whom. With this type of instruction, the teacher determines which explorers and explorations are important by including them in the talk. This form of instruction can be personalized for the students in that it is tailored to what they have been learning and their personal frames of reference, but it is still essentially a teacher-centered strategy with little activity by the students. This is a presentation of information to be transferred from teacher to student.

A variation on this strategy is the teacher proceeding from the talking or telling part of a lesson to a demonstration of the way something works. This, very much like the master and apprentice model, is the teacher showing the students how to do something. In the context of school, it may be demonstrating an experiment or showing how to add mixed numbers. The students watch the demonstration and may participate in a question and answer session, but they are not personally manipulating anything. They are experiencing the "doing" vicariously. The learning is a transmission of procedures and knowledge as opposed to students learning through their own firsthand experience and involvement.

In both of these forms of direct instruction it is accepted that some form of student independent practice for reinforcement of the new information will be included. This practice could include traditional means such as completing worksheets or workbook

pages, but may also include more authentic forms of using the knowledge just acquired. The idea is to process the information that was transmitted so that it can be replicated and recalled as necessary.

Direct instruction plays an important role in many classrooms, helping to introduce new concepts and procedures and to broadcast information to a group of students. It is geared for a whole group, not specifically to individual learners. It does not take into consideration those who may already know the information, or those who will not be able to learn in this manner. It is expected that some will gain some reinforcement from the teaching and others will need extra assistance. Some refer to this as “teaching to the middle.” In addition, it is not designed to allow for the creative or critical thinking necessary for conceptual change. For that, there are other approaches that will be discussed later in this chapter.

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GUIDED INSTRUCTION

While direct instruction is a teacher-centered approach, guided instruction asks both the teacher and student to take an active role in the learning process. The teacher is still for the most part in control of the teaching, while the student participates as the teacher leads. With direct instruction students are asked to process much of the learning on their own. In guided instruction the teacher scaffolds the learning to the students’ levels, supporting and guiding them to higher levels.

One dominant form of guided instruction is discussion—similar to the Socratic dialogues. Rather than one student being the focus of the dialogic process, a class or small group works its way through ideas. The teacher may present an issue or concept for discussion and then systematically guide the students to new views or concepts. As the students are guided, they adapt this new information into their schemas of what they have previously understood.

Guided instruction can also be used with a small group or groups of students in exploring new concepts. Again, the teacher is still dominant, but the students may attempt various approaches to a task with the teacher helping them to analyze why they

are doing what they are doing and to recognize why that approach may or may not be working. One example would be in an inquiry science class where students are exploring the principles of bridge building. The teacher will set the stage with the materials, ask each student to think about what they already know about the concepts, experiences, and knowledge they may have of bridges, and then talk them through what is happening as they try different approaches. In this situation, the teacher guides the student by establishing the experience and helping to provide direction and make analytical connections—but it is the students who are making the choices within their own exploration.

Guided instruction has become very popular in reading instruction. Recognizing that students learning to develop the skills associated with reading do so at an independent rate, teachers can help by guiding this process, tailoring it to the students’ levels. They work with small groups of students on specific skills or concepts, helping to scaffold their learning, supporting them by supplying them with words they do not know, and selecting works that are within their skill range. The support of the teacher and fellow students helps the students move ahead in their skill attainment.

Like direct instruction, guided instruction involves some form of practice of the acquired knowledge. This practice is often group practice, where students work together through problems or ideas, discussing why certain strategies and responses are appropriate. This guided group practice could then, as with direct instruction, be followed with independent practice.

Guided instruction can take multiple forms within the classroom. It can be small group work, individualized work, or function as a whole class activity. The key is that the teacher guides the learners to higher levels by acknowledging what they already know, supporting their individual learning levels and styles, and designing instruction to meet these demands. In that the instruction is still dominated and controlled by the teacher, it is still considered to be teacher-centered, but with much student participation and activity. Given that it is still teacher-centered, the instruction may not reflect what is considered an authentic approach to teaching. Authentic approaches to teaching are explored in the next entry.

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AUTHENTIC INSTRUCTION

An overview of “authentic instruction” in education can be divided into three categories: school organization to support authentic instruction, classroom organization and teaching methods to actualize authentic instruction, and authentic assessment to ascertain what students learned from authentic instruction.

Before detailing each of these three categories, it is important to first define key terms—in this case, what exactly might be labeled “authentic” and “inauthentic” in terms of instructing students.

DEFINITIONS OF “AUTHENTIC” AND “INAUTHENTIC” INSTRUCTION

Proponents of “authentic instruction” seek to make schools a place where children learn more naturalistically, countering what some claim as the more pervasive school practice of students memorizing de-contextualized facts and engaging in practices that are meaningless outside of school.

With younger children, this approach might include teachers providing students with objects and other materials to manipulate, as well as facilitating the social situations in which students interact with these materials and each other. This approach would seek to encourage a young child’s natural curiosity and social development. At the secondary level, authentic instruction might involve students working on world- or work-related projects, applying knowledge and skills towards a usable end. Such an approach to instruction might spark or sustain a student’s interest or intelligence, combine multiple disciplines, or increase a student’s sense of self as a change agent outside of the school arena.

In defining authentic instruction, it is also important to note what “inauthentic” instruction might look like. Proponents of authentic instruction might make the claim that the way schools have been traditionally organized has been incompatible with real life. For example, schools have historically divided curriculum into discrete subject areas, whereas outside of school one must apply knowledge from multiple disciplines simultaneously. Teachers have also traditionally measured what students have learned through tests; yet one rarely takes a test once they leave school.

In summary, inauthentic instruction would organize learning around traditional school goals—ascertaining content area facts and skills measured through examination. In contrast, proponents of authentic instruction would organize schools and classrooms around real-world tasks and the interests of students.

However, it is also important to note that within the larger authentic instruction philosophy of teachers preparing students to exist more fully in the real world, there are wide-ranging perspectives as to what the goals of authentic instruction should be. Some approaches to authentic instruction focus more on developing a sense of community, caring, and ethics; others on service learning and community action; while still others are more explicitly geared toward learning for the workplace.

SCHOOL ORGANIZATION TO SUPPORT AUTHENTIC INSTRUCTION

There are a variety of ways that schools around the world have been organized to support authentic instruction at both the elementary and secondary levels.

One of the earliest iterations of authentic instruction in formalized schooling is the “Montessori Method” developed by Maria Montessori, who opened her first “Child House” school in Italy in 1907. Montessori schools are for preschool and elementary school children, and operate under the assumption that teachers should help students discover and develop their unique and individual talents.

The Montessori philosophy claims that what children need to develop is the ability to think and reason humanely rather than the capacity to memorize facts. To this end, Montessori schools are structured to more authentically match the world of a child’s developing imagination rather than false impositions from the adult world. Someone observing a Montessori classroom might witness children walking around freely, choosing objects to work with, and learning by doing in the physical world. Teachers employ an integrated approach to the curriculum, and call students together for “lessons” based on actual student need rather than a preset bell schedule. In approaching Montessori instruction, teachers focus on individual children, and seek to motivate students to love learning rather than achieve a grade. The overall school environment is set up for focused discovery.

American schools that have organized around simi-

lar philosophies have been greatly influenced by the writings of John Dewey and the “constructivist” movement in education (1902; 1938). The constructivist philosophy directly ties together experience and education, positing that learning is a mental construction where one builds on prior and current knowledge to develop new knowledge. Dewey believed that “thinking is doing,” and many child-centered schools throughout America are organized so that children can work with materials and inquire how things can be created in the world. This type of school organization embodies the authentic ways that children might learn and do outside of school. More recent theorists on learning, like Howard Gardner (1983), have illustrated how this constructivist approach to learning is consistent with brain research and the development of an individual’s multiple intelligences. Some schools, such as The Key School in Indianapolis, Indiana, have organized their entire curriculum around students discovering and developing their multiple intelligences through pursuing theme-based projects.

At the secondary level, in concert with efforts since the 1980s to break down large comprehensive schools into smaller, themed schools, there has been a movement to make learning more authentic. To this end, a variety of ways to reorganize secondary schools has emerged. For example, some schools (like Central Park East Secondary School [CPESS] of Sizer’s Coalition of Essential Schools in New York [CES]) have reorganized time to support authentic instruction. CPESS has students engage in areas of learning for “blocks” of time rather than discrete 40–50 minute periods. The idea is that block scheduling allows for in-depth inquiry and sustained efforts towards a goal, and thus, is more in line with how one would operate in the world. This allows teachers to focus on students’ intellectual and social development, as well as on embedding “habits of mind” in inquiry into subject matter. At CPESS, student learning culminates in a Senior Institute where students graduate high school via an elaborate portfolio process. CES schools emphasize depth over coverage, theorizing that such attentive inquiry is more authentic and lifelike.

A related structure that has emerged to assist secondary schools in making learning more authentic involves students in community-related experiences from brief “job shadows” to extended internships,

apprenticeships, and service learning. Under this model, used by schools such as The Met School in Providence, Rhode Island, in-school experiences are combined with out-of-school work and connections to the community. Within this type of school organization, students may be in school three days a week or less; and when they are in school, you are apt to find them working independently or in one-on-one consultation with an adult/teacher.

CLASSROOM ORGANIZATION TO SUPPORT AUTHENTIC INSTRUCTION

As previously stated, learning that is organized around authentic instruction may not take place in traditional classroom settings, or may do so for only part of the student’s educational experience. In instances where teachers and students interact in more traditional classroom settings, there are a variety of ways that teachers may approach instruction to make it more authentic.

One umbrella approach to authentic instruction is Project Based Learning (PBL). Teachers using a PBL approach to instruction might teach thematically (e.g., a science teacher might use the theme of “Connectedness” for a particular unit). During the unit, the teacher would mix direct instruction with student inquiry, gradually moving from the former to the latter. Using the example of the field of science and the theme of Connectedness, students over time would choose a question or area to investigate (e.g., How do city population shifts impact air quality?). Students would then do more in-depth independent research into their area of inquiry, using skills and scientific thinking emphasized and modeled by the teacher. The project may culminate in different levels of “authenticity”: (1) Students may present what they learned and concluded to their peers; (2) Students may present what they learned and concluded to government officials, environmentalists, or in some other public forum; and (3) Students may use what they learned to try to impact environmental policy and practice. Also, students might use multiple methods in presenting what they ultimately learned (or did), drawing from their multiple intelligences.

It also is possible to use a modified version of authentic instruction on a smaller scale, for example, for individual lessons rather than whole units. A math teacher might present the class with a real-world

problem that can only be solved through the use of algebra. Then, students may work individually or in groups to solve the problem, applying the math skills they have learned. However, what happens with the end product from that lesson impacts how authentic the instruction is. If the students then hand in their materials to the teacher, receive a grade, and move on to the next topic the next day, some would say that this is more problem-based learning than authentic instruction. If, however, students continue to use algebraic skills to explore real-world local or global issues and solutions, then the instruction can be considered more authentic.

Teachers using authentic instruction in the classroom might view their role as more of a coach, facilitator, or guide. The student is no longer learning the material to impress the teacher; the teacher is helping the student inquire and learn for particular purposes that have real-life applications. In actualizing this role, teachers might have individual conferences with students, develop individual learning plans in consultation with parents, serve as a sounding board for ideas, as an advisor, and as a general resource. The teacher also might become a liaison with the community, arranging internships and service-learning opportunities.

One issue that arises for teachers using authentic instruction is assessment. Once teachers move away from multiple-choice tests and summative essays to inquiry projects set in “the real world,” questions of quality emerge. How do you ensure that the students are learning? Issues of authentic assessment are discussed next.

AUTHENTIC ASSESSMENT

In contrast with traditional measures of assessments (multiple-choice tests or essay exams), authentic assessments in schools seek to model the way individuals might be assessed outside of school. Rather than taking a timed test, a student being assessed authentically might have several weeks to explore a topic, cull together what they learned, and present their work by a deadline. The presentation could be in written form, in a mixed-media portfolio, or through a multimedia exhibition, or some combination of all three.

Although these forms of exhibiting knowledge may be more authentic than a test, even within these

modes of instruction teachers need to assess students. Whether this is done by grades or through narratives, projects, and presentations, there is still a need for some standard of judgment so that students, teachers, and parents can know what constitutes good work, and so that other institutions can know what an individual student has achieved.

One common way to lay out authentic assessment criteria for authentic tasks is through the use of rubrics. Through a rating system or scoring tool, rubrics communicate expected quality of work in different performance skills related to a task. Ideally, what makes rubrics authentic is that they are performance-based, as it is performance on tasks (rather than ability to take tests—which is only one type of task) that students will more often be evaluated on in their lives outside of school. When a teacher uses a rubric to evaluate products of authentic instruction, expectations are clearly printed for all to see (e.g., “Exceeds Expectations,” “Meets Expectations,” “Approaches Expectations,” “Is Not Yet Ready”). Levels of proficiency from the rubric assessment may or may not be translated into a number/letter grade, depending on the requirements of the teacher’s school and state.

Though widely used, it is important to note that rubrics are not the only way to assess learning from authentic instruction. For example, some schools and teachers use narrative description of student work and progress, either in combination with rubrics, or as the primary system of feedback and assessment.

CHALLENGES TO AUTHENTIC INSTRUCTION

While different levels of authentic instruction are now widely practiced, there are also challenges to the viability of this type of approach to teaching and learning. One challenge comes from within teachers themselves, as teachers who have not experienced such teaching in their own schooling often have difficulties manifesting authentic instruction philosophies, especially without ongoing support. Moreover, schools (particularly secondary schools) have traditionally been organized around “control” of students, whereas authentic instruction involves allowing students to control, to varying degrees, the pacing, scope, and sequence of their learning.

On a wider political level, the recent rise of high-stakes testing has posed a great threat to authentic instruction. The resurgence of the testing movement came in response to the perception by some that progressive pedagogies were failing to serve students. Authentic instruction became a target for accusations of “feel-good fluffiness” in schools, with no concrete or measurable learning taking place. In the No Child Left Behind Act of 2001, test scores were the primary suggested measurement to determine whether a student, teacher, or school was failing.

As this chapter on instruction is being written, there is ambivalence and confusion about authentic instruction. There has been some backlash to the testing movement; yet many have embraced testing as a path to ascertain how students across social strata are performing in schools. Teachers continue to struggle to make learning relevant to their students, even as “the test” looms and dictates much of the curriculum. As schools react to threats of loss of funding, independence, or existence, for low performance on tests, authentic instruction continues in enclaves. About half of charter schools and many private schools are organized around authentic-based missions, sometimes receiving waivers on tests that other schools must adhere to so that their students and teachers can have more curricular choice and control.

As schools become increasingly market-driven, some argue that authentic instruction is still available where there is a demand through such avenues as charter and private schools. Others, however, claim that the widespread embracing of high-stakes testing by public schools has led to minimal levels of relevant thinking, reading, and writing for most students (King and O’Brien 2002). As public school students’ real-life interests are decreasingly valued in favor of a common set of standards, it is the more affluent students—through guidance and money from prosperous parents—who are able to transcend the basic school curriculum and experience “enriching real-life activities” in private (King and O’Brien 2002, 44–45). If this is true, it can be argued that authentic instruction is becoming a commodity obtained mostly outside of public schooling by those who know the most about it and are able to afford.

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INDIVIDUALIZED INSTRUCTION

Individualized instruction can be characterized as a learning relationship that is direct and customized. Teachers delivering individualized instruction would work to become aware of a student’s strengths, needs, and interests, and then would match curricular content and instructional method to the individual learner.

Instruction focused on the individual learner can occur in a variety of educational settings. Within traditional whole classrooms, a teacher might work with a student and her parents to develop an individual plan for inquiry and growth underneath an umbrella theme, topic, or sequence. Students with special learning needs might receive more official individualized learning via a process commonly called an Individualized Education Program (IEP), sometimes receiving instruction in smaller classes or with the aid of a paraprofessional. Another way instruction can be individualized is through tutoring, lessons, or apprenticeship, where the learner works one-on-one with a more knowledgeable person to develop particular skills or habits of mind.

Although individualized instruction commonly includes the learner receiving more personalized “face time” with a teacher, there are divergences in approach. For example, some individualized instruction focuses on developing the learner’s strengths, while others focus on ameliorating the learner’s weaknesses.

MULTIPLE INTELLIGENCE

Influenced by the work of Harvard University’s Howard Gardner in the 1980s, individualized instruction focused upon developing a student’s strengths has been bolstered by the concept of multiple intelligences (Gardner 1983). According to Gardner’s original theory, there are seven categories in which an individual can be intelligent (linguistic, spatial, musical, bodily-kinesthetic, logical-mathematical, interpersonal, and intrapersonal); Gardner later amended this theory to include an eighth intelligence (naturalistic). Because traditional mass instruction has focused primarily on the linguistic and logical-mathematical, some educators have embraced Gardner’s theories as a way to break from the past and tailor instruction to the many ways an individual can be intelligent. Thus, in-

dividualized instruction guided by the concept of multiple intelligences often involves a student learning unfamiliar content and skills through his or her strengths—which might include painting, composing, drama, and poetry. Within a particular domain of learning, the teacher serves as a bridge, drawing from the individual's innate intelligences to help the student learn new material.

As with programs attending to students' individual intelligences and styles, individualized programs have also been used for those who need enrichment. These gifted and talented learners often outpace the rate of learning of their peers and can also work on more advanced concepts. Many of these learners are able to work independently, which is one reason individual programs are appealing alternatives. The talented and gifted (or TAG) learners may work on independent research efforts, read texts at a higher level, take on external projects, or simply move ahead more quickly with class work. Programs like SRA's (Science Research Associates) reading program, initiated in the 1960s, were geared to allow accelerated students to progress independently at their own rate. Similar programs were designed in math, where students self-checked their work and met periodically with the teacher for more formal assessments and learning conferences. These programs, and others designed by classroom teachers, aimed to differentiate curriculum and instruction for TAG learners to ensure that the more academically advanced were challenged and motivated to continue learning at an accelerated pace.

SPECIAL EDUCATION

Students who have been diagnosed with a learning disability may receive individualized instruction through special education. When a student is certified to receive special education, an IEP is developed between school staff, parents, and sometimes the student, at an in-person meeting. Frequently included in the paperwork completed at these meetings are statements of goals and objectives for student learning, current performance in school, and any accommodations that might need to be made in order for the student to improve current performance and meet future objectives. Until recently, IEPs focused mainly on student weaknesses as a result of some disability; however, more recently, student strengths have been included in the individual learning plans.

RECENT TRENDS: TECHNOLOGY TO SUPPORT INDIVIDUALIZED INSTRUCTION

The recent rise of electronic educational technologies has created both opportunities and dilemmas for individualized instruction. Computers and the proliferation of educational software offer opportunities for students to work independently, with progress guided and monitored by computer programs. While some claim that such instructional software allows for learning to be more self-directed and self-paced, others say that this hyper-individualization removes human elements that are essential in the learning process: imagination, identification, and personal relationships between teachers and students (Smith 2003).

For a variety of reasons, there has been some discrepancy between the exceptional promise of the use of technology in the classroom to enhance instruction and the reality of its use. How technology has been used as a tool in support of learning has been limited and influenced by a number of historical factors.

In the 1960s and 1970s, technology in the classroom was divided into three related patterns. In one, instruction related to technology focused on computer literacy and learning to use computers. A second pattern focused on computer programming, and in a third, students used computers for rote learning focused on drill and practice sets. This third approach, influenced by behavioral learning theory and called computer-assisted instruction, encouraged students to work on specific practice sets or individual tutorials in areas such as vocabulary or math. For example, one computer application designed to help students learn arithmetic at this time “offered learner feedback, lesson branching, and a system for tracking individual student progress” (Means 2000, 197).

From the 1980s through the late 1990s, technology assumed an increasingly prominent role in instruction, with its uses changing in the classroom. Becoming more consistent with Vygotskian social learning theory, educators began to view technology as a learning tool that students could use in collaborative and interactive situations. Computer-enhanced instruction is a term employed to describe these more collaborative uses of technology. As Means states,

An important difference between these uses of technology and the computer-assisted instruction model dominant in the '80s is the nature of the instructional activity: The activity is much more than the technology and is initiated and orchestrated by a teacher, rather than by a software system. (Means 2000, 193)

Many forms of computer-enhanced instruction combine uses of online databases with production software and historical content. For example, students may access primary-source documents, such as journals written by members of the Oregon Trail, on a number of websites (for example, that of the Smithsonian Institute). Once they have accessed these Internet documents, teachers might have students collaboratively study and become meaningfully engaged in historical events or those in other content areas.

By 2000, a number of exciting Internet-based science projects had already appeared. For example, through the Global Learning and Observations to Benefit the Environment (GLOBE) program, students can become involved in real scientific investigations. From the comfort of their own classroom, students can work with real scientists and take readings of local atmospheric conditions as well as measure soil and vegetation conditions.

At the turn of the millennium, however, due to economic disparity, not all of these innovations have readily found their way into classrooms. The contrast between technology-rich and technology-poor classrooms where students do or do not have access to technology has been described as the “digital divide.” As Barbara Means states, “Only 39 percent of classrooms in the poorest schools had an Internet connection in 1998, compared to 62 percent of classrooms in the wealthiest schools” (National Center for Education Statistics 1999, as cited in Means 2000, 195). The implications of the digital divide for instruction are profound, given the central role that technology now plays in most aspects of American society.

INSTRUCTIONAL CHALLENGES

While individualized instruction has provided an alternative to traditional mass instruction, organizational conditions in schools sometimes make it a difficult practice for teachers to actualize. One challenge is the number of students a teacher must ac-

count for—the more students a teacher has under her charge, the more difficult it is to tailor instruction to individual needs and strengths. A related challenge is time (individualized instruction requires flexible schedules in tune with the pace of individual learners); however, schools are increasingly mandated to cover more topics in less time and have all learners reach the same “standard.” Finally, whereas textbooks and district curricula offer the same material and pacing to all students in an efficient and economic way, individualized instruction requires more on-site resources (i.e., libraries, books, CD-ROMs, Internet access) for the many paths of learning an individual student might follow. Thus, lack of resources often makes individualized instruction an out-of-the-ordinary practice; the majority of schools offering personalized instruction advertise it as something special beyond the educational mainstream.

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PHILOSOPHICAL ISSUES IN INSTRUCTION

Instruction, like most other areas of education, is wrought with issues of appropriateness. What is the best approach to instruction? Is there a best grouping, a best time to introduce concepts, a certain style of learning or particular culture that needs to be accommodated? This part of the chapter addresses these issues. First, various educational philosophical issues are discussed, focusing on the pendulum swings from traditional viewpoints to more progressive and contemporary positions. This discussion then continues by looking at subject matter differences and different ideological perspectives related to the disciplines. This is followed by a discussion of issues related to student development, looking at different educational psychologists' theories related to learning and instruction. In addition, this chapter looks at groupings used for instruction—whole class, small group, heterogeneous or homogeneous mixes, and individualized learning. Finally, the chapter addresses the various contexts of learning: who are the learners, what are their needs, and how do various forms of instruction serve them?

PROGRESSIVES VERSUS TRADITIONALISTS

In the United States, every ten years or so since World War II, the educational pendulum has swung. During one period, the Progressive philosophy—emphasizing individual student’s understandings and more holistic, naturalistic, authentic, experiential learning—will prevail. Then in the next, a backlash of traditional basic-core skill learning will take over, emphasizing reading, writing, and math skills (the Back-to-Basics Movement).

Following World War II, schools in the United States were mostly implementing a traditional approach, attempting to accommodate the baby boomers filling the schools and striving to beat the Russians in the space race through emphasizing math and science education. This change in what was taught was accompanied by a change in how things were taught. Instructionally, this ushered in the “teacher-proof” era in which curricula were designed to ensure that teachers would follow a script, a prescribed manual, or even bypassing teachers by hooking children up to new technology such as individualized audio tape programs.

Despite the efforts of proponents of teacher-proof instruction, it became clear that the teacher is key to the teaching and learning effort and cannot be removed from the situation through technical developments such as individualized or programmed instruction (Bond and Dykstra 1967). Fueled by the social upheaval of the sixties and seventies, there was a resurgence of the progressive movement with increased concern for individual learners and learning styles. There were efforts to look at the context of student learning, have more hands-on activities, more heterogeneous groupings, and more experiential and differentiated learning.

While progressive instruction is student-centered, its success requires highly talented and skilled teaching. Because this was not always available, progressive instruction was not always implemented in an effective manner, and the pendulum swung back to a more traditional or back-to-basics approach. This included whole-group teaching, homogeneous grouping, recitation, rote learning in math, phonics in reading, and much textbook work, mostly disconnected from students’ worlds. In this reversal, finding personal meaning in student learning was de-emphasized.

Through the eighties and early nineties, there was again a push for approaches that would recognize the needs of the learner, promote better understanding, depth of knowledge and critical thinking skills. Inquiry learning, authentic instruction, and approaches such as whole language reading and writing became more widespread. However, this is not an economical approach to learning, as it requires committed, well-trained teachers with support from families, schools, and communities. It is also a very local approach, focusing on each child, each class, and each school, without means for mass-producing or generalizing results. Due to the unwieldy complexity of this approach, we are currently experiencing a swing once again toward traditional values in education, emphasizing standardized testing and standards that may allow comparisons across large groups of students.

To this end of standardization, the intent in the current No Child Left Behind legislation is to raise the level of learning in core skill areas for all children in the United States. It is assumed that monitoring these efforts through testing will ensure this. For schools, teachers, and students, there are steep penalties for not attaining the desired learning levels. Specifically for instruction, this has translated into school districts and, hence, many teachers, adapting their instruction to these tests and standards rather than their students’ learning, learning styles, progress, interests, and needs.

Student-centered formative assessment, according to Grant Wiggins (1999), leads to improved student understanding. However, by adapting instruction to a standardized test rather than to their students, teachers are removing the contextual nature of the learning. In essence, they are removing the learner. By focusing attention on something standardized across the state or country, teachers alter the pacing of their teaching, attempting to “cover” all of the material to be tested rather than adjusting the amount of content to that which can effectively be learned by the student. In attempts to teach everything included in the tests, teachers economize, wholesaling some instruction to ensure it is at least seen by students. Echoing previous pendulum swings, teachers once again teach to the middle via direct instruction and tailor when possible with guided instruction. The level of interaction is limited by the quantity of what is to be taught. Students are once again passive recipients of knowledge.

In addition, the emphasis on standardized tests has altered the focus of instruction to only certain subjects and skills. As mostly reading and math have been tested, these are the subjects that now dominate the curriculum and teachers' instruction. Other subjects are perceived to be of less importance and therefore are not taught in depth or with much frequency. Teachers emphasize what they are directed to teach and what they are rewarded for teaching. The emphasis on assessments in math and reading leads to a lessening of teaching in subjects such as science and social studies.

For example, currently subjects such as science and social studies are more appendages to reading and math—science through informational texts or mathematical graphs and tables; social studies through stories. Under this traditionalist approach, learning how to teach science using an authentic inquiry-based approach becomes less important and therefore fewer learn how to do so. The current traditionalists, as has been historically true, want students to be able to read, write, and cipher, and with this foundation students are expected to acquire all other knowledge. Advocates of the arts, science, and social studies ponder the next swing of the pendulum or wonder if a balance may yet be struck.

THE READING WARS

Nowhere is the debate on instruction more vitriolic than the so-called Reading Wars of the last thirty years. Teaching reading has never been a simple straightforward practice. As reported by the National Reading Council in 1998, it is “such a complex and multifaceted activity, no single method is the answer.” (Showers et al. 1998) Until recently, it was not expected that everyone would or could learn to read at an advanced level, especially within a fixed time frame. According to Showers, Joyce, Scanlon, and Schnaubelt (1998), over much of the last century only about two-thirds of students learned to read effectively at a secondary level and even fewer in urban areas. It did not depend on which approach had been used: phonics, look and say, basal readers, or whole language.

The debate between a more natural, whole language approach espoused by progressive constructivists and a phonics-based approach promoted by traditionalists began to rage when Jeanne S. Chall (1967) pub-

lished *Learning to Read: The Great Debate*, supporting a phonics-based approach, incorporated within basal readers. This phonics purist philosophy resists any approach other than direct phonics and phonemic awareness instruction. On the other side, whole language purists criticize any use of isolated phonics practices. Along the sidelines, teachers of reading have typically supported a multidimensional, balanced approach; unfortunately, they are not always in command of what instructional approaches they may use.

In California in the 1980s, whole language was the designated curriculum choice for reading, but little support was given to teaching teachers how to use this new approach. While mandated by the state, its implementation was often poor if used at all. In the early nineties, after ten years of whole language, test results indicated very poor reading results across the state. Rather than targeting its poor implementation, the entire whole language approach was lambasted. Its focus on comprehension became the target for the poor results rather than other factors, including poor implementation, insufficient teacher support, and other societal factors. Since that time, proponents of phonics and phonemic awareness have used these and other comprehensive test results to attack the natural and holistic approaches. A phonics-based approach is now mandated in California and in many other states.

A balance in reading instruction is being encouraged by reading scholars—blending the decoding through phonics and phonemic awareness with holistic approaches of using multiple language experiences, assisting students to learn to decode as well as build strategies for comprehension, and building an interest in reading. In some areas, teachers are now being trained in balanced literacy approaches, learning to tailor reading to the individual's needs and focusing on inquiry (Fountas and Pinnell 1996).

MATH WARS

Similar to the Reading Wars, traditionalists in math encourage building a math foundation by primarily memorizing math facts, focusing on computational skill in a rote manner. In contrast, on the progressive, constructivist side, math instruction focuses on inquiry and understanding. Like the Reading Wars, the debate in the United States has been going on for many years.

Following the launching of Sputnik by the Soviet Union in the late 1950s, the United States prioritized math and science learning. In the early sixties, mathematicians and scientists were employed to correct the apparent problems in our school curricula that led to our inability to surpass the Russians in the early years of the space race. These highly regarded mathematicians and scientists created a “new math” approach, which focused on set theory and introduced more advanced mathematical concepts in a simpler state at an early level, hoping to stimulate later interest and talent in advanced math.

Unfortunately, most elementary math teachers were not given the necessary support in learning—let alone mastering—this new approach. The teacher-proofed curricula left teachers and parents at a loss about how to help their children learn math. A predictable backlash occurred with traditionalists calling for basic, old-fashioned arithmetic learning, that is, the memorization of math facts and simple computations with tried-and-true formulas. While mathematics textbook publishers were returning to this approach, math education researchers were exploring an approach to help students develop a core understanding of math concepts that was based on real life applications versus the isolated math facts or abstract concepts of the so-called new math of the sixties. This “new-new” math—inquiry math—became part of the National Teachers of Mathematics Council’s recommendation for math standards, based on both mathematical content and processes.

While the content included in the standards can be found in traditional textbooks, the approach to teaching is different due to the emphasis on process. The process approach to math instruction includes an emphasis on problem solving, especially of real world, student-based relevant problems. The students are asked to demonstrate their reasoning and proof of its effectiveness, communicate with one another about their strategies, represent their findings in various forms such as drawings, tables, and graphs as well as traditional computational expressions, and make connections to other areas of math, other subject areas, and aspects of their everyday life. For teachers, it takes more effort and more time to instruct in this manner than in the traditional rote-memorization approach. It also takes more time and

effort for the teacher to learn how to teach in this way, as the teacher must understand the concepts behind the math.

Such time pressures have been a problem with many of the progressive approaches and often bolster movements supporting traditional approaches. Proponents of a traditional approach point out that those students taking the time to “learn for understanding” may not do as well on standardized tests that ask them to compute math facts quickly at an early age. Lack of results on these tests creates doubt as to these students’ math achievement. The inquiry proponents assert that computational fluency is necessary, but not at the expense of understanding. The two, they believe, should go hand in hand. This may not happen with inadequately prepared teachers. While the battles continue, a balanced approach is once again being suggested in which teachers are taught the necessary basic math concepts, taught how to teach for understanding, and include in their teaching the skills necessary for computational fluency.

OTHER BATTLES

At the heart of the ongoing progressive-versus-traditionalist instructional dilemmas is the tension between teaching for comprehension of content and process and teaching for acquisition of content and basic skills. While this has been most apparent in the Reading and Math Wars, other subjects have also been entangled as they try to determine what standards are most critical for K–12 students. National experts in content areas such as math, language arts, and science have for the most part sided with those who favor a deeper understanding and an authentic, inquiry approach to learning. These standards involve students in an inquiry process in which they explore their understandings, investigate ideas in real world situations, and develop firsthand conceptual meaning of these subjects. This is a depth-versus-breadth approach to learning.

Many states, on the other hand, have focused their standards on minute, detailed aspects of content knowledge—the facts that would most likely be tested on national and international standardized tests. Teaching a myriad of miniscule facts is time consuming in its own right because so much needs to be covered. This typifies the breadth-versus-depth view. As these facts are often taught in an

isolated manner, as opposed to connecting the facts and integrating them as concepts or principles, much is not retained beyond the short term. If tested the next year, it must be taught again. With the fact-based approach, teachers do not utilize instructional tools to help these students make these connections. The proponents of inquiry assert that this disconnectedness hinders real learning and the development of an interest in subject matter that might create our more advanced subject area learners. Still, as long as these are the types of tests given, the states and districts are rewarded for a fact-based approach to learning.

This continued educational and instructional polarization has created a dichotomy for teachers trying to accommodate their districts as well as teach in a way that will ensure their students' long-term understanding. These are ongoing dilemmas, rooted in educational philosophies, for teachers trying to discern the best way to instruct their students.

One other philosophical difference between the progressives and the traditionalists is their perspectives on separation of subject matter content. Traditionalists believe that academic subjects should be taught in a pure form, keeping true to their individual natures and hierarchy of concepts. Progressives believe that learning is a holistic process that should reflect the manner in which the subjects appear in real life—blended with no specific boundaries. More traditional teachers might separate the instruction of subjects into individual lessons and segments of learning with the primary intent being, for example, to learn math in math class, and reading in reading class.

A more progressive teacher might blend reading into the subjects and the subjects into reading. To learn science concepts, for example, a teacher may encourage reading about science in trade books or picture books as well as informational texts. A science lesson may include math concepts such as having children learn to cook simple recipes, scientifically combining foods while measuring the amounts and proportions included in the recipe.

Progressive elementary teachers' instruction frequently emphasizes integrated thematic units. In an integrated thematic unit, students learn various subjects at the same time as they engage in a core-learning theme that integrates the subjects. Many times these themes are based on topics that will be appeal-

ing to student's interests, while also often including traditional material. For example, third grade students might learn about early colonial-period history in the United States by writing a play and creating period costumes; learn about the weather and climate of coastal Massachusetts by reading about the difficulties the Pilgrims faced; learn mathematical concepts through examining related holiday recipes to be made for the recreated feast; as well as learn about the foods and natural resources in these climates that were not available in Europe. To varying degrees, children may select what they want to learn and the teacher tailors the group's learning as the students' motivation and interest wanes or changes directions.

The issues that progressives and traditionalists differ on most significantly stem from philosophical arguments based on the nature of learning, and on the importance of the developmental and social needs of students. Drawing from experience and developmental psychology, elementary teachers who are progressively oriented tailor their instruction to the developmental strengths and needs of their children. The focus of the instruction changes according to the specific grade level. Pre-kindergarten teachers emphasize creative play, in many ways aligned to the theories of Jean Piaget and Lev Vygotsky. In creative play there is an emphasis on students' rule making, symbolic thought, creation of patterns, and both individual and group play. It is thought that such early symbol making is the precursor to more complex symbolic thinking, such as the child's acquisition of reading or mathematics skills.

Those who believe in more traditional methods might prefer a more strictly academic focus at these levels. A traditionalist instructor might de-emphasize the belief that students need to have instruction follow their particular developmental level and that teaching strategies should vary accordingly. A traditionalist would be more likely to believe that content and instruction should be the same, regardless of the student's developmental and social needs. This debate is played out throughout the early years of schooling into adulthood in each of the subject areas.

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DEVELOPMENTAL ISSUES IN INSTRUCTION

Developmental issues are concerned with growth and change that occur over time. Thus, developmental approaches to instruction have one main common theme—that learning is an individual and unfolding process. However, within developmental approaches, there are differing views about how that process evolves.

For example, some developmental approaches to instruction are based on strict “stage” theories and the belief that individual learners must pass through one stage before they can move on to the next. Developmental approaches that are less hierarchical might view learning as more of a series of “phases,” while dynamic developmental instruction might view the learning process as more cyclical. Instructional decisions will be impacted by a teacher’s position on this continuum, from choices in content and curriculum to pedagogy and approach.

Another way developmental approaches differ is in their attention to the individual isolated from the rest of the world versus the individual in the world. Stage theorists tend to focus on the individual as an isolated learner, while constructivist theorists tend to focus on the learner as part of a social world. Additionally, social constructivists consider the persons who share space with the individual learner, as well as the constraints and benefits of learning in a particular place. Social constructivists with a more critical bent might also consider how societal expectations related to an individual’s age, sex, race, and social status might impact a learner’s development.

An additional divergence within a developmental approach to instruction can be characterized as “the whole-part debate”: whether the learner must master the parts before they can comprehend the whole or whether developing understandings of parts and wholes can occur simultaneously. This divergence has great implications for approaches to instruction of such skills as reading; for example, whether emergent readers should be taught to gain proficiency with letters and words *before* whole text readings or *while* they are immersed in reading and writing whole texts.

Thus, while developmental instruction focuses on developing individual understandings over time, there are varying instructional emphases on sequencing,

the individual, societal influences, and developing isolated skills. Undergirding these disparate approaches to developmental instruction are a variety of theories on how people learn, which are discussed in the next section.

DEVELOPMENTAL THEORIES OF LEARNING

Stage theorists believe that changes in people across the lifespan can be explained by transformation in cognitive structures. They typically understand development as occurring in discrete areas (e.g., cognitive, moral, psychosocial) with individuals passing through distinct and qualitatively different stages.

Swiss psychologist Jean Piaget provided an early theory to explain human cognitive development, using four concepts to describe how the child passes through distinct developmental stages. Piaget refers to the mental network for organizing concepts and information as “schema.” “Assimilation” is a concept he used to describe the process through which one makes sense of experiences and perceptions by fitting them into previously established cognitive structures (schema). The process of creating new schema is called “accommodation.” Gaining a balance between assimilation and accommodation is a self-regulatory process that Piaget terms “equilibration” (Piaget 1969).

Several theorists consider moral and psychosocial stages of development. For example, Lawrence Kohlberg describes moral reasoning from childhood through adulthood. His proposed levels of moral development include: (1) preconventional, where moral reasoning is characterized by a focus on the consequences experienced by the person as a result of actions; (2) conventional, where individuals have internalized the rules or conventions of society; and (3) postconventional, where individuals move beyond the concrete rules and focus more on the principles that underlie these rules.

Constructivist theorists explain development in terms of people continually and actively creating systems of meaning through experiences and interactions with others. Such theories consider learning to be socially mediated. Constructivist theorists also tend to pay great attention to the social and cultural contexts of learning, assuming that interactions are a necessary condition for cognitive growth.

Russian psychologist Lev Vygotsky explained growth by stages, using the construct of the Zone of Proximal Development (ZPD). The ZPD is the difference between the level of competence a person can achieve alone and the level of competence to be achieved when working with a more expert other. A child, therefore, has the maximum potential for growth and development when they are functioning within their zone of proximal development. A further aspect of Vygotsky's theory of development is that learning occurs in social contexts. Learning is the outcome of joint cognitive activity with more expert others which the learner subsequently internalizes into independent cognitive functioning. (Vygotsky 1978)

The concept of "scaffolding" refers to the support given to learners by adults and more skillful peers through cooperative activity. This support enables the learner to participate in a task or solve a problem at a more advanced level of competency than they would be capable of in the absence of this support (Wood, Bruner, and Ross 1976). This theory indicates that what a person can do cooperatively today they may be able to do independently tomorrow.

Within the concept of scaffolding, the adult or more skillful peer controls those elements of the task that are beyond the learner's competence, allowing the learner to concentrate on those elements of the task which are within their range of ability (Wood, Bruner, and Ross 1976). Thus, social interaction is a critical feature of scaffolding as the expert and learner share "intersubjectivity"—a commonly understood purpose.

Scaffolding is temporary and adjustable (Cazden 2001), allowing the learner to participate in the mature task from the beginning. The level of support must be geared to the learner's changing level of competence and is negotiated by both the expert and the learner. The scaffolding concept assumes that learning will result through the interaction of the more skillful person with the learner, given the existence of specific conditions of the interaction. Wood et al. (1976) describe these conditions as: (1) recruiting the learner and focusing their attention on the task; (2) simplifying the task to suit the learner's level of expertise; (3) keeping the learner on task while constructing increasingly more complex versions of the task; (4) accentuating critical features through feedback; (5) giving the learner control over error situations; and (6) modeling ideal solutions to the task.

PHASES GUIDING DEVELOPMENTAL INSTRUCTION

Understanding how people grow and change throughout the lifespan is important in designing instruction. Although a learner's age is but one hierarchy by which to structure developmental theory and practice, it remains a prominent way to organize educational systems and philosophies of instruction. Thus, in discussing how developmental phases might guide instruction, the following segment follows the more traditional (yet current) format of grouping students by age and associated school level. However, it is important to remember that these are general categories, which only guide instruction, and that there are many exceptions that teachers frequently need to account for.

Infancy and Toddlerhood

As the infant becomes older, less time is spent sleeping and more time is spent responding to sensory stimuli in other activities. Also, physical rates of growth are at their greatest during these first three years of life, as the young child gains locomotion through crawling and then walking. At the same time, this increased physical activity and interaction with stimuli comes with safety concerns; thus, teachers of toddlers need to use carefully designed, safe-to-handle, and easy-to-manipulate objects.

Another key characteristic of these early years is that the child learns to understand and use oral language. Imitation appears to be a strong factor in paving the way for the first word utterance as young children interact in their social world. Vocabulary acquisition is typically very rapid once children begin to utter words. During these early years of using language, it is important that they have many opportunities to hear language and make approximations that are reinforced. Because play is often a young child's work, it is through playful exploration within their social and physical worlds that young children begin to develop mental concepts.

Early Childhood

During early childhood, children bring a special set of needs and strengths to instructional settings. One common characteristic is the inclination to ask questions of

the world, which can make the learning context both a place of inquiry and chaos. Aware of this developmental tendency, teachers working with preschool children might work to balance encouraging the questioning spirit with channeling inquisitiveness toward productive ends. Also, because younger children tend to not be able to follow complex directions, a teacher might work to keep the complexity and number of directions during instruction clear and manageable.

Play is also a critical component of development for young children. Three-year-olds often tend to be content playing on their own; however, as children develop, they often become interested in actively interacting with their peers and inventing imaginative play involving other children and adults. To this end, drawing is often the initial step toward young children beginning to grasp a concept of print as a way of communicating. The scribbling of the toddler begins to grow into distinct pictures and representations during these years. At around four to five years, the young child often becomes interested in the idea that scribbles or beginning letter formations can communicate a message to others.

Childhood

During the elementary school years, students progressively become less focused on playful experimentation and more focused on academic and social success. Forming and maintaining friendships gains importance and teachers aware of these developmental concerns often work continuously to make the classroom a place where all children feel welcome and safe. The careful monitoring of collaborative groups becomes particularly important, and a teacher might be observed instructing elementary-aged children on social ethics and interpersonal dynamics. Additionally, positive feedback from teachers often begins to matter a great deal to children of this age. Teachers may offer frequent praise reinforcing desired behaviors, coaching children through difficult academic or social tasks. There may be rewards for individual or whole class success, displayed publicly, or shared in private one-on-one conferences.

Early Adolescence

Typical of early adolescence is the tension between seeking the approval of others (peer group, adults)

and wanting to define one's individuality in opposition to others. This impacts the adult/teacher-adolescent/student relationship, as well as relationships within the classroom. One challenge for teachers is how to tap into the advantages of peer group approval to enhance instruction, remaining wary of the complex social dynamics (including issues of power and gender) that often arise when early adolescents interact in a group setting. Because of these developmental issues, middle school teachers might structure group activities into the curriculum as a motivation. However, cooperative-learning strategies would need to be very carefully implemented and monitored, with an eye toward gender dynamics, student relations (respect versus bullying), and developing a sense of community.

Because of these early adolescent developmental considerations, a middle school classroom might be built around issues of ethics, character, and community as much as around content areas. However, simultaneously, whether students believe they are academically viable also looms important: It is often during the middle school years that learners gain a sense of themselves as good or bad at school. Thus, a teacher might work to ensure that the social context for learning is a supportive one by maintaining fair and equal expectations, avoiding publicly "singling out" students, and providing opportunities for adolescent learners to be involved in tasks with support from more experienced, knowledgeable others.

Late Adolescence to Young Adult

At the high school level, individuality often plays an increasingly important role in a learner's development. Students at this level also often begin to place their individuality within a global context. While peer acceptance remains prominent, decisions associated with adulthood—life and career paths—begin to share center stage. More clearly defining who one is and what one believes in (identity development) occur in concert with decisions about work and school (career development). Aware of these developmental factors, a high school teacher might make room in the curriculum for student choice, including options for students to take action in the world based on the content the class is exploring. Instruction might be differentiated based on individual student interest and need, encouraging students to explore a

wide range of options. In contrast to a focus with early adolescents on group relations and social and moral development, instruction with late adolescents might utilize the group as a support structure to enhance individual exploration and achievement. Though more a time of individuality, peers continue to play an important role for learners at this age in developing a sense of sexual, cultural, and ethnic identity.

The Development of Adult Learners

While educational thinkers like John Dewey were very influential in shaping developmental approaches toward instruction of children in the early half of the twentieth century, recently more attention has been paid to developmental approaches to instruction of adult learners. This has occurred in concert with the rise of adult learning programs, and the increasing number of adults who return to school later in life.

Attention to the developmental path of teaching adults often considers the “identity threatening” (Kegan 1994) aspects of learning. In order to learn, one must change. The longer one has been alive, the harder it often is to change—because learning often means a fundamental reconstituting of self and a lifetime of thinking in a particular way. Teachers who are cognizant of adult learner identity would approach instruction thoughtfully, with respect for current student understandings and worldviews. Rather than seeking radical shifts or reversals in thinking, instruction would be geared toward developing new “trajectories” of understanding. Aware that resistance is common in the developmental process of adult learners, teachers might validate existing views even as they ultimately work to help the adult learner consider multiple alternative viewpoints.

It is the ability to weigh multiple viewpoints that is often considered to be on a higher developmental level. For example, in order to consider issues of multiculturalism and culture, some claim that one must first realize that his or her own beliefs are culturally constructed and that other people have different culturally constructed beliefs (King and Shuford 1996). In fact, it is helping adult learners to consider multiple viewpoints and to see their own beliefs as distinct but limited views of the world that

are often the primary goals of a developmental approach to adult learning.

Later in life, as a learner’s physical faculties may wane, instructors of older adults often need to consider additional factors that impact learning, including visual and aural challenges. For example, elder learners with sight difficulties may need to be provided with large print or books on tape to more fully engage in the learning process.

DEVELOPMENT IS DIVERSE

In considering these generalizations about the relationships between age and developmental phases, it is important to keep in mind that such phases are not fixed. For these considerations to be meaningful guides for instruction, it is important to recognize that individual learners may experience things quite differently because of diversity in life experiences and contexts.

For example, while we might assume that older people can concentrate for longer periods of time on a given task, specific motivational conditions may contradict this: a six-year-old that is highly motivated to ride a bike will likely be able to concentrate for longer than the thirty-five-year-old who is trying to learn a new mandated email program he has no interest in using. Social conditions are also a significant consideration: A twelve-year-old who lives in poverty and takes care of her siblings while her caregiver works away from home to earn money may have already taken on responsibilities and dispositions associated with adulthood. Furthermore, certain human needs, such as belonging and attention (Maslow 1968), often span a lifetime, and thus continually impact instruction regardless of one’s age. Levels of comfort or distress, senses of competence or failure, excitement or boredom, or passion and heartache that are experienced in instruction can be as real and significant for the three-year-old, the thirty-five-year-old, or the ninety-year-old. Developmental information may be considered as one of many important pieces of data—and part of a much larger picture—that a teacher may draw from to ascertain the best approach to instruction for a given group of students or for an individual learner.

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SUBJECT MATTER AND INSTRUCTION

A host of societal, educational, and contextual issues influence teachers' approaches toward subject-matter instruction. Influential contexts include teachers' personal orientations toward curriculum, their teaching-and-learning knowledge base, school and subject-matter departmental perspectives, state and national teaching frameworks, and state policies toward standardized testing, to mention a few. Two of the more important organizational factors impacting instruction are grade level and, at the secondary level, subject matter.

SECONDARY INSTRUCTION AND THE DISCIPLINES

At the secondary level (usually grades 6–12), the focus of instruction often shifts. Instead of remaining with one teacher all day in the same classroom, students now begin to study individual subjects in separate classrooms. There is a range of ways in which secondary teachers approach their subjects and their students. Some secondary educators teach their subjects in relatively didactic and lecture-based ways, similar to teaching approaches that they may have experienced themselves in college courses. The division of the curriculum into academic disciplines and the separation of secondary teachers into individual classrooms encourage such didactic approaches. Other secondary teachers work to support student growth and learning in ways more often related to a specific academic discipline (e.g., mathematics or history). In addition, students' critical and abstract thinking, development of multiple perspectives, and ability to learn collaboratively often occur embedded within a particular academic focus.

How teachers view their academic discipline, and the instructional approach they use to promote student learning and growth within it, varies widely on the secondary level according to discipline as well as views of pedagogy (educational approaches). Some teachers consider their subject matter as factual content and favor the use of traditional didactic teaching methods, such as lecture with individual student follow-up work. Other secondary teachers

view the subject in a more open-ended and dynamic way and favor more authentic teaching and learning approaches.

An authentic learning situation is one that either takes place in a real world setting, or simulates one in the classroom. With such instruction, students often learn specified academic knowledge and skills (subject matter learning outcomes) in an apprentice-like situation, or with the learning outcomes highlighted within the authentic experience. For example, in ninth grade science, students might learn knowledge and theories about stream ecology as they work in real streams outside the classroom. Within this approach, the learning outcomes can be defined in the course of the learning situation, thus *emerging* from the disciplinary inquiry. In some examples of authentic instruction (and less frequently in didactic teaching), students and teachers may discuss and negotiate the learning goals and outcomes.

A form of authentic instruction seen on both the elementary and the secondary levels is contextual teaching and learning. Contextual teaching and learning is an approach that helps teachers relate subject matter content to real world situations and motivates students to make connections between knowledge and its applications to life outside school. The approach also emphasizes student problem solving within a real-life (authentic) context, encourages students to become self-regulated learners who learn from each other, and employs authentic assessment (Pierce and Jones 1998).

On the secondary level, individual teachers use multiple instructional approaches to develop a repertoire. For example, many high school mathematics teachers may follow a traditional instructional model of presenting clear formulas and step-by-step computational methods to their students before having them practice similar formulas. But the same teachers may also support a current goal in mathematics instruction of promoting their students' problem-solving and conceptual understandings (National Council of Teachers of Mathematics 1989). In order to promote such mathematical conceptual understandings, teachers might have students extend and apply mathematical knowledge to real life situations and solve nonroutine problems with a variety of mathematical methods (Runesson 1997). While students may be encouraged to share individual proofs and problem

solutions, this type of instruction often underscores the goal of maintaining the integrity of the soundness of mathematics, through the plausibility of the conjecture or the solution (Ball 1995).

One goal of instruction in history is to promote students' ability to think historically. Historical thinking is a concept with a number of characteristics. It implies that students can reason from primary and secondary documents, interpret historical events in accurate ways, create historical narratives from multiple perspectives, and begin to understand immediate and underlying causes of events. History instruction can also be said to have a "scientific" component (Turner-Bisset 2001). History teachers frequently have students:

- Frame historical questions
- Collect/analyze evidence and historical findings
- Place understandings into historical/global contexts
- Develop content understandings and historical narratives

History teachers often rely on problem-based learning to promote their students' understandings in these areas.

History instruction may also involve a literary aspect in which students communicate their historical understandings in a variety of ways (Turner-Bisset 2001). To communicate such understandings, students might create extended writings, productions of historical accounts, and/or reconstructions of past events and lives. Teachers may encourage students to communicate their historical understandings through drama, role-playing, simulations, storytelling, and story writing. Students may summarize with pictures, videos, or reports.

Secondary English instruction often includes a focus on having students learn to read critically and imaginatively, write, communicate orally, listen critically, and critique and analyze uses of technology and the media. English and Language Arts teachers frequently promote their students' development of these skills and understandings through engagement in literature. For example, an English teacher might engage students in an instructional unit on persuasion and freedom of expression. Inclusive in this unit is the intent for students to develop cognitive and creative/critical skills related to seeing multiple

perspectives, to place literature within a social context, to develop their own writing voice, and to learn to anticipate and refute the opposing argument and understand one's own argument. Students might examine the concept of freedom of expression both by creating their own texts and by reading existing texts, including Shakespeare's *Julius Caesar* and selected writings that look at voice and expression from a variety of perspectives (e.g., *Lenox Avenue Mural* by Langston Hughes, *Ain't I a Woman* by Sojourner Truth, and *Declaration of Sentiment* by Elizabeth Cady Stanton).

The instructional details of this unit might begin with students brainstorming controversial topics of importance to them as teenagers (e.g., the establishment of the draft, the legal age to consume alcohol, curfew). The class then selects a topic as a whole or in small groups, brainstorming arguments both for and against their particular issue. Then, as a class the students write a persuasive essay, using their arguments both to support their position and to give them insight about opposing perspectives, which they have to refute. After they write their essay, the students take part in a controlled debate on the same or a similar topic. This might be followed by having students read, analyze, and discuss two classic texts that use different approaches to persuasion: *Ain't I A Woman* and *Declaration of Sentiments*. The unit might conclude with a reading and individual written analysis of the play *Julius Caesar*, with an emphasis on persuasion and freedom of expression. Exploring the relationship between identity and freedom, this unit is intended to create mutual support between reading, writing, speaking, listening, and understanding technology, and to promote cognition, and critical-and-creative thinking skills. It also is intended to create a sense of student growth and empowerment, in personal, societal, and literary terms. Finally, the unit is intended to facilitate student self-reflection.

Another approach seen in secondary instruction is having teachers from different content areas work together to create interdisciplinary instruction. In an interdisciplinary design, teachers in at least three separate subject disciplines team-teach in an integrated thematic unit. The unit is considered integrated in that no one particular subject dominates the unit, and it is considered thematic when a particular theme becomes the organizing center of the unit. Examples of organizing themes are "flight"

and “intelligence.” The interdisciplinary design itself must be valid in terms of supporting the individual discipline. Interdisciplinary design allows teachers to instruct in authentic ways that cross disciplinary boundaries, as frequently occurs in real-life learning situations (Jacobs 1989).

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GROUPINGS ISSUES IN INSTRUCTION

A critical component of organizing for instruction is considering how best to group learners. Different grouping structures offer possibilities and challenges to the learning context. It is important that instructors have clearly in mind what they intend learners to experience and thus what is the most suitable arrangement to enable this. It is also important to continually assess the suitability of grouping structures to determine whether or not they are meeting learners’ needs, and to be flexible and willing to change the groupings when appropriate.

Different groupings create different learning opportunities for students. It is important to closely align the goals of instruction with appropriate group structures. Implementing a variety of group structures within any one learning context and continually varying these can create an interesting and effective learning environment. Implementing flexible groupings in which the composition of group members and the duration of groups change according to student needs can also maximize learning. Whatever grouping structure is chosen, it is critical to remember that group processes for group members will not be intrinsically known and therefore need to be explicitly taught. Grouping arrangements can have unintended consequences such as developing a social stigma or lowering student expectations and performance. It is important, therefore, to continually keep in mind both the intended, and perhaps unintended, social and academic consequences of any grouping decision.

Some key concepts to consider in structuring group arrangements are: (1) whether to create cooperative or competitive groupings (or some combination of each); (2) group size (i.e., whether to have individual

activity, dyads, small or large group formats); and (3) whether groups will be formed on the basis of homogeneous or heterogeneous ability.

COOPERATIVE OR COMPETITIVE ARRANGEMENTS

There are three main ways to structure student learning environments. One way is to create an individual learning environment in which students have personalized learning goals and are encouraged to work independently. In an independent arrangement, students do not typically need to share information with each other, and they do not need each other’s input to complete learning tasks—any interactions with other learners are typically of a social nature. Students may be working on similar or different tasks; however, the underlying concept is that they are working alone and are assessed alone. Two alternative set-ups to the individualized learning environment are the cooperative and the competitive arrangements. In a cooperative arrangement, students work together toward a common goal. They assist each other and are responsible for learning materials both individually and collectively. In a competitive arrangement, students typically work alone or in small groups and are compared against each other.

Cooperative grouping can be used at any level and for many purposes. Cooperative tasks can involve learners working together on the same tasks (such as all talking together, manipulating materials, or figuring out a mathematical solution) or it can involve learners each working on a different task that contributes to a common whole (for example, creating different pieces of a model that will be put together to form a complete model). An example of learners participating in separate tasks within a cooperative learning context is commonly referred to as the “jigsaw” method (for more information, see Johnson and Johnson 1994). Using the jigsaw method, a teacher might assign each student a section of a text to read, and then have students share what they read with other students thus enabling everyone to have access to the whole text.

One of the benefits of cooperative grouping structures is the opportunity for students to learn with and from their peers in the learning context. One specific structure to facilitate this type of instruction is peer tutoring. Peer tutoring involves students learning from their peers in a structured situation. It can

be structured as same-age or cross-age tutoring. Same-age tutoring involves a tutor, who has a more advanced understanding of the material, working together with a tutee. Cross-age tutoring involves a tutor and tutee of different ages, with typically the tutor as the older student.

Research indicates that cooperatively structuring peer tutoring can be an effective means of instruction for young people because of heightened peer interaction. This might be because young people can be considered cognitive equals and are more able to share an element of “cognitive closeness” or “cognitive congruence.” Thus, tutors may be better able to understand the difficulties tutees encounter. For example, for a ten-year-old tutoring a six-year-old in writing, it has not been long since the tutor learned to write, perhaps better identifying with the tutee and providing helpful strategies. Put another way, tutors can remember “being there.” Another consideration here is that peers often tend to “speak the same language” and might find it easier to engage in effective dialogue and find relevant and meaningful ways of explaining concepts to their peers. Peer tutoring can be an effective way of providing one-on-one instruction and attention within a larger class environment. Research shows that in a well-structured peer-tutoring context, both the tutor and tutee can make social and cognitive gains.

GROUP SIZE

There are many different configurations that can be made in terms of group size, and this impacts both what people learn and how they learn. The major configurations might be considered to be dyads, small, or large group structures. It is important to keep in mind that one may use dyads, small groups, and large group activities within the same lesson and that this ability to be flexible and to change instructional groupings can help students who work better in different settings. Changing the grouping arrangement within a learning context can also add a variety that can be critical in maintaining student attention and engagement.

Dyads

Dyads involve two learners working together, often within a larger learning context. Dyads can be set up as a one-on-one teaching situation (as in peer tutor-

ing) or can exist on a more equal footing where both participants are learners and neither has the role of being the “teacher” or “expert” in the learning situation. One example is the “pair/share” strategy. This instructional strategy involves learners talking or working with one other person in a dyad before sharing their learning experiences with the whole group. This provides the opportunity for everyone to talk and be listened to, as well as rehearse and try out their ideas before articulating thinking and ideas to a larger group. Dyads can function to create a safe and smaller environment within the larger learning environment.

Small Groups

Group sizes of six to eight participants have been found to maximize the benefits of having multiple perspectives and expertise (synergy) while enabling everyone to participate. Such a group size has also been shown to be beneficial in terms of minimizing “process losses”—time needed to organize people and strategies for the group. However, group sizes that are even smaller (e.g., three to four participants) tend to increase the participation of the members of the group because it is harder to “get lost” and easier to have one’s voice heard in a smaller group. Group size is an important instructional consideration if maximizing student participation within a group is one of the goals of a particular learning event.

One specific method used to increase learner participation in groups is to assign roles. For example, in reciprocal teaching (Palincsar and Brown 1984) a student takes the role of leader and leads the group through the processes of clarifying, questioning, summarizing, and predicting about text before turning over the role to another group member. In this way, the leadership continually moves around the group and the leadership role is clearly defined. Other roles—such as recorder, researcher, timekeeper, and speaker—can be integral to the group learning process. However, often these skills need to be explicitly taught, particularly when students have had little practice with such group dynamics.

There are many compelling reasons for organizing learners in small groups. Small group instruction can facilitate the ability of instructors to intentionally design instruction for the specific needs of individual group members. It can provide a small, socially

supportive learning context in which learning and teaching can focus precisely on what the students need to learn next in order to move forward.

Large Groups

Large group settings tend to require teaching to be the same for everyone. Typical large group settings include lectures and instruction wherein learners are all working on the same material. Large group settings can be an effective way to attend to a large number of people in a time- and cost-effective manner. This approach can be a time-efficient way to share information that is not too challenging or contentious. Large groups can also be formed for motivational or energy reasons, the intention being to create a critical mass of interest and energy. However, when material becomes more challenging, learners often need to have opportunities to struggle with the material, to interact with others, and to ask questions. This can be difficult to support in a large group setting; however, within a large group setting one can incorporate activities such as the dyad “pair/share” arrangement discussed earlier.

HOMOGENOUS AND HETEROGENEOUS GROUPING

Groups may be considered homogenous or heterogeneous based on several different factors. One might consider age, interests, academic skill, social background, physical abilities, preferred learning styles, or any number of factors. It is important to consider the makeup of any group and the possible effects it will have on all learners when planning instruction.

Sometimes groups are intentionally planned to be heterogeneous. Heterogeneous groups may be constructed on the basis of instructor knowledge of students, or by the students themselves. An example of a student heterogeneous group formation strategy is the “max mix” strategy in which participants themselves have to get into groups that they see to be the most diverse over as many dimensions as they can think of.

One of the most common grouping criteria is commonly referred to as “ability grouping.” Ability grouping involves creating grouping arrangements that are made up of students who are believed to be similar in the skills that are required for particular instruc-

tion. For example, ability grouping might be based on academic skills in reading, or physical-motor skills in physical education. The most common ability grouping that occurs in schools is based on broad judgments regarding academic skills. Ability grouping is usually created as either within-class or between-class.

Between-class grouping involves providing different classes for students with different abilities. These groupings are often made on the basis of scores in standardized tests. A critical issue to be conscious of in relation to the sorting of students on the basis of standardized test scores is the cultural bias that can be present in such exams. Thus, sometimes between-class grouping functions to shut out certain groups of people from higher ability settings.

A further problem that can stem from between-class ability grouping is the tendency for the quality of instruction provided in lower ability classes to be less than that provided to higher ability classes. This “self-fulfilling prophecy” affects learners when teachers have lower expectations of students positioned in lower ability classes. The lower expectations of the teacher can impact the achievement of students who would attain at a much higher level if expectations were higher. Between-class grouping can also cause social problems for students, as they may feel stigmatized by their membership in a particularly high- or low-ability class.

An alternative to between-class grouping is within-class grouping wherein ability grouping occurs for short time periods and is flexible. Within-class grouping creates clusters of students within a whole class based on perceived ability in relation to the specific subject or content to be learned. For example, several groups within the class might be formed based on comprehension skills in reading, oral language presentation skills in drama, computational skills in numeracy, or spatial understandings in geometry. As these examples illustrate, different ability groups might be created within the same curriculum area, like language arts or mathematics. Within-class ability grouping allows for more targeted assessment and grouping decisions based on specific skills in contrast to the more broad attributes often considered in between-class grouping. It is important to keep in mind that while within-class grouping can reduce the sometimes stigmatizing effects of between-class permanent group-

ings, students are often still aware of the reasons for grouping and steps need to be taken to avoid stigmatizing effects within the classroom.

There are opportunities and challenges inherent in both homogeneous and heterogeneous grouping arrangements. One of the advantages of homogeneous ability grouping is the opportunity for students to work on similar material at an appropriate level. A drawback is that less skilled students are all together and do not interact with more highly skilled students. This reduces the opportunity to learn from peers, have role models, and see images of what is perhaps appropriate behavior. It is important to keep in mind that whether learners are considered to be homogeneously or heterogeneously grouped, there will still be a range of skills within the group. In other words, both homogeneous and heterogeneous groupings contain a range of abilities that impact instruction.

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CONTEXTUAL ISSUES IN INSTRUCTION

Instruction is embedded in larger contextual issues that are critical to examine when planning, implementing, and evaluating instruction. These contextual issues can be described as the cultural, economic, political, and social contexts of the learner. In many places, these realities reflect the views and norms of the dominant culture. Often, however, the norms and expectations of this dominant group do not meet the needs of many learners. The learners whose needs are met tend to be those who are most closely aligned with the dominant culture; thus, considerable inequities in access, experiences, and outcomes from instruction can exist.

Cultural, economic, political, and social contexts can have a significant impact on both the instructional situation and outcomes. Instructors who are aware of these and address them in their planning and implementation of instruction are more likely to prevent inequalities in schools, and by extension, society.

CULTURAL CONTEXTS

Cultural stereotyping is important to be aware of when planning instruction and considering learners. Stereotyping can happen in several different ways. For example, stereotyping can happen when an instructor has different expectations of the performance of students based on socioeconomic class or race. It can also exist when an instructor uses materials in their teaching that contain inaccurate stereotypical images. Educators need to be careful not to stereotype learners based on cultural group affiliation. Large differences exist within groups and stereotyping can promote inaccurate and harmful information. Teachers should be cognizant of their expectations for students and ensure that they are helping all students reach their potential.

Learning contexts can affect whose culture is represented and acknowledged in instruction. People tend to do better in instructional situations when they can see and experience their own cultural values reflected and present in the curriculum, instructors, and exceptional peers. Instruction geared toward these ends can be said to be taking a multicultural stance, which confronts inequities in schools and societies. As Sonia Nieto (2001) explains, multicultural education needs to be about more than cultural sensitivity—it needs to address deeply ingrained inequities, promote social justice, and be accompanied by equal access to resources.

Individuals belong to many cultures based on, for example, ethnic origin, race, religion, gender, age, class, native language, geographic region, and abilities. Individuals who belong to certain cultural groups (for example, able-bodied, heterosexual Caucasians) tend to carry more cultural capital into many instructional settings in North America. Instruction is often designed to meet the realities, experiences, and needs of these people to a greater degree than those outside the dominant culture.

In instruction, there is a growing recognition of the need to account for these contextual issues and to find ways to address them in order to provide learning opportunities that have the potential to meet the needs of all learners, and to break oppressive power relationships. The cultural capital (see Bourdieu 1984) that students bring with them to the learning situation can have a direct influence on how successful they are in any instructional setting. In-

structional planning, implementation, and intended outcomes need to meet the needs of people who have different religious beliefs, who are from diverse ethnic backgrounds, who speak different languages, and who identify as being differently abled.

Historically, the theory of assimilation has been used to define and justify instructional methods. In North America, assimilation theory typically assumes that all students and teachers should conform to the unwritten rules of the Anglo-American, able-bodied, Christian, middle class, English-speaking culture, regardless of individual cultures or groups to which students and teachers actually belong. If we examine many instructional settings today, we find that this assimilation theory explains what students experience. The instruction is indeed often designed towards the needs of people who fit neatly within these categories. Many people do not fit all of these categories, and some people do not fit any of them. Instruction that is designed on the theory of assimilation can therefore promote inequalities and injustices to those whose cultural groups are not represented by these categories.

The theory of assimilation exists alongside the deficit theory. Deficit theory views differences between people as problematic and a fault of the individual. From the perspective of the deficit theory, cultural diversity is a problem rather than an asset. Those who do not conform to the expectations of the dominant culture in North America are viewed as having a deficit. The responsibility for failure in instructional settings is then unfairly placed on these individuals when all students receive the same instruction and are treated in the same manner.

In contrast to assimilation theory, cultural pluralism or multiculturalism stresses the fact that people have multiple memberships in different cultures and that these memberships and differences might be recognized, and indeed, celebrated. Differences between people are acknowledged as an asset to instruction rather than ignored.

ECONOMIC CONTEXTS

The economic conditions in which people live can affect their views, experiences, and outcomes in instruction. Disproportionately large numbers of students representing lower levels of socioeconomic status (SES) tend, for example, to be assigned to

low-ability groups in a variety of educational contexts, to perform poorly on standardized tests, and to be in educational settings that have inadequate instructional resources. Students living in poverty are more likely to be placed in lower academic classes and to have lower academic expectations placed on them.

There are many other less visible ways in which economic factors can directly impact instructional participation, for example, homework practices. It may not be reasonable to expect the same homework performance from students who spend their hours after school looking after younger siblings in a small apartment while their parents are working to earn enough money for the family to survive, with those of children who have a parent or caregiver at home after school to support them with their homework, a car to drive them to the library, and a quiet place in the house in which to concentrate. At the same time, it is essential that people have equally high expectations of the intelligence and abilities of students with low SES. One dilemma here is that in most places in North America there is a need for more equitable ways of funding schools so that schools have equal access to resources no matter what their geographical location.

POLITICAL CONTEXTS

Political contexts can have a profound effect on instruction through such means as testing mandates. Educational testing is an area that has historically been shown to contain cultural bias. While there is an increased awareness of these issues, there is a need for continual monitoring and critical analysis of test construction, content, administration, scoring, and interpretation. There is generally a need for more culturally valid testing procedures so that students from nondominant cultures are not penalized by earning disproportionately lower test scores.

SOCIAL CONTEXTS

The social context of society also prescribes sex-role stereotypes that can be inaccurate and limiting within instructional relationships. Research indicates that much of the behavior deemed to be male or female is socialized from a very young age. Instructors need to be conscious of the theories and beliefs

they hold with regard to gender role stereotyping and continually work to not create expectations for student achievement on the basis of gender. For example, in Western culture it is often assumed that females are more able at language and verbally oriented tasks while males are more able at spatial and physical tasks. Indeed, research can be found that supports this assertion; however, the underlying issue to be aware of in instruction is the role that different socialization, educational opportunities, and expectations by teachers play in promoting these patterns (see Gilligan 1982).

Discrimination on the basis of perceived special ability or disability is a further way in which instruction can serve to promote inequalities. Instructional contexts must serve the needs of special populations, including both students with special learning needs and students with special learning abilities. There is a tendency for instruction to be aimed at the students who lie between these two extremes and to exclude those on the margins.

Religious beliefs can also have a significant impact on how a person thinks, feels, acts, and learns. Because of this, the instructional situation needs to consider different religious beliefs and the impact of different instructional decisions on belief systems. The first step for instructors here is to be informed about the different religious groups with which learners identify.

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CLASSROOM MANAGEMENT AND PLANNING

One aspect of the contextual factors of instruction is the approach teachers take to manage their classrooms. This is referred to in varying texts as classroom or behavior management, instructional guidance, or learning environment or organizational management. The latter terms refer to the arrangement of the learning environment and instructional practice to guide the behavior and tone within the classroom to assure learning can take place. This is in contrast to classroom or behavior management

where discipline is used to control behavior separate from instruction. Instructional guidance is essentially a more democratic, student-focused approach, whereas classroom management is a top-down teacher-directed approach. As with other aspects of instruction, the best way for classrooms to function is disputed among practitioners and educational scholars.

Teacher-controlled classroom management is typically oriented towards student behaviors that fall outside the norm and are found to be disruptive to the flow of the class. The essential form of management is discipline, with the teacher dictating the rules of behavior and the derived consequences. In more traditional forms, the teacher either rewards or punishes the students for their behavior, attempting to correct the behavior until it is changed. In some forms, such as behavior modification, the rewards and punishments are extrinsic (not tied to the student's long-term goal of internalizing appropriate behavior, but reacting to immediate pleasure/pain stimulus).

One approach that has gained popularity since the early 1990s is Assertive Discipline, where there is no differentiation among students or their behaviors in breaking rules. Any rule broken by any student for whatever reason is treated the same. Typically, the consequences for breaking a rule the first time include writing the offenders' names on the board, then with each subsequent offense, giving them a tick mark until some privilege (such as recess) is lost. Finally, the students' parents are contacted and the punishment is formalized. In some teacher-centered approaches, prevention is key, trying to stem negative behavior before it occurs. Still, with these efforts, little decision making is left to the student. The teacher dominates or controls the environment, and carries out the punishments. The child does not learn how to behave appropriately, but rather to not misbehave per a specific set of rules.

In contrast, learner-centered approaches to classroom management are typically referred to as "instructional guidance approaches" as they focus mainly on getting the students to recognize and internalize appropriate behavior. In one such approach, the community model, students are encouraged to recognize their responsibility to the community of learners to which they belong. They are given rights and privileges that are upheld by the group, not just the

teacher. This model facilitates a caring approach, which encourages the teacher and students to bond with strong personal and professional ties. Unlike other learner-centered models, the community model tries to focus solely on the positive, without logical consequences other than the impact the behavior would have on the relationship of the students within the community and their responsibilities to themselves. Other models such as “reality therapy” and “teacher effectiveness training” focus specifically on the individual child and that child’s needs—socially, emotionally, and physically. There is much communication between the teacher and student to assess the problems that the child is having, as well as sharing decision making in how to rectify them.

As with the debate between traditional and progressive instructional philosophies, traditional approaches are cleaner, simpler, and less time consuming than those that involve focusing on students. The learner-centered approaches look for a long-term solution in which the student learns how to be self-monitoring and in self control. This takes considerably longer than ticking someone’s name on a board or doling out candies as rewards. However, some students, given their behavioral needs, respond better to the traditional behavior management techniques. These are often used in special education classes with children who have specific behavioral disorders. The community model requires a committed group of students and teachers who are willing to find the time and effort to create the environment necessary to build the relationships and self-awareness for children to succeed at being self-monitoring.

PLANNING

Planning is a critical part of instruction, as it involves making decisions ahead of time regarding both the big picture and smaller details of instruction. While plans will not always be followed absolutely during instruction, prior planning means that the instructional flexibility necessary can be informed and relevant. Planning is undertaken before and within instruction to enable teachers to consider what is to be learned, how it is to be learned, what is needed to support this learning, and how to assess what is learned.

Planning may be short or long-term. Long-term planning outlines the big picture for instruction over, for example, a “term” or “marking period.” Short-term planning on the other hand outlines a smaller period of time, for example, a lesson or week of instruction. It is helpful to make a written record of both short- and long-term plans when designing instruction. This enables the instructor to keep the big goals in mind while also attending to important details. Such planning also serves as a form of communication between instructors when necessary.

Planning records might include the goals or objectives for instruction, the description of the learning experiences that students will participate in, and the resources needed. Necessary resources might range from consideration of a suitable site for instruction to the actual materials resources that participants will need. Planning also often includes an outlining of intentions for assessment.

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EDUCATIONAL ASSESSMENT

The basic notion of tests developed to assess particular traits or characteristics of individuals has been present in various cultures for centuries. Historical reviews by Howard Wainer (1990) as well as Hoi K. Suen and Joseph L. French (2003) note early evidence of civil service type examinations in China (2200 B.C.E.) as officials were tested to see whether they qualify to work for the emperor. The Chinese are credited with recognizing early on that samples of behavior, measured under specific conditions, could provide accurate information about abilities and skills possessed by an individual. This information could be applied in other settings to determine the best vocational placements for officials. China instituted tests of archery, arithmetic, horsemanship, music, writing, as well as social graces, to be used in selecting candidates for various offices.

Large-scale testing in the United States and Europe began in the late nineteenth century with a focus on assessing intelligence, achievement, and other ability areas related to personnel placement. However, the major impetus for what is often called the psychometric movement was the development of the Army Alpha and Beta tests used to place army recruits in World War I. Nearly two million men were administered these measures. Since then tests have gained strong credibility in American society as an objective and efficient means for obtaining information regarding characteristics of individuals being assessed. The mental testing movement spurred research and test development in a variety of areas including: intelligence, academic achievement, physical attributes, personality, interests, and attitudes.

Since World War II, a wide array of measures have been developed and published. The Buros Institute for Mental Measurement has been producing the *Mental Measurement Yearbook* since the 1930s (Plake, Impara, and Spies 2003 is the fifteenth edition). This publication is designed to help consum-

ers by providing reviews of all published tests. Reviews are written by experts in the field and cite the most current publications related to a particular measure's test construction, reliability, and validity. Originally published in book form only, this information is now also available online for easier accessibility (see www.unl.edu/buros).

The field of educational assessment has grown exponentially given the emphasis placed upon accountability in educational practice, changes in test theory, and technological innovations. Differences in opinion surrounding what constitutes quality education and related standards have led to controversy with respect to appropriate assessment practices. The proliferation of new measures for school-age populations also attests to the importance of tests in assessments of a variety of constructs related to growing educational demands.

Tests and other alternative forms of assessment have been identified as the gatekeepers to educational opportunities and services. This is especially evident with respect to achievement and aptitude measurement. Students who score high may be eligible for gifted programs and resources allocated for students with high potential. Those who score lower than their assessed potential may be deemed eligible to receive special education services.

It should be noted that the term testing refers primarily to the act of administering, scoring, and interpreting a sample of behavior obtained through a particular data-gathering method. Ronald J. Cohen and Mark E. Swerdlik (1999) define a test as a measuring device or procedure. The term assessment is much broader, encompassing not only the notion of testing but also any form of systematic data gathering within a particular context. Alternative assessment refers to any data-gathering method that detracts from the typical standardized approach to measurement (i.e., authentic assessment).

Legal controversies have arisen about the usage of tests in the educational arena. Some of these include: tracking of ethnic minority students, accusations of bias within intelligence and other aptitude measures, and appropriate testing practices for examinees with disabilities. The ethical codes of many professional organizations (e.g., the American Psychological Association and American Educational Research Association) include guidelines addressing appropriate test development and application in terms of test development practices, publication (e.g., advertising), test usage, validity, informed consent, privacy, reporting of results, and competence of the examiner.

Educators and researchers have continuously emphasized the importance of the assessment process rather than having a sole focus on test scores. However, as will be noted in the entries that follow, priority has often been given to the results of standardized measures, rather than more flexible and informal methods of assessment. Educational assessment implies a focus not only on formal testing but also informal methods of obtaining information about an individual or group. This chapter will cover various assessment methods used in the educational arena, specifically:

1. academic outcomes
2. adaptive testing
3. authentic (informal) assessment
4. computer based testing
5. criterion-referenced testing
6. evaluation
7. high-stakes testing
8. norm-referenced testing
9. teacher assessment
10. test development
11. test theory

The areas addressed are not mutually exclusive, and there is the potential for considerable overlap between them. Attempts have been made to minimize redundancy and to cross-reference between entries when necessary.

The entry on academic outcomes highlights the different ways in which achievement and other indicators of educational benefit are assessed. Attention is given not only to standardized measures of achievement and aptitude but also intervening variables that impact academic performance.

The entry on adaptive testing provides an introduction to the computerized testing section. Adaptive testing was viewed as promising during its early inception with respect to individual testing, however, its development remained dormant until the advent of computers. Computer adaptive testing has become very popular, impacting not only the types of measures that are being developed but also leading to changes in test theory.

The entry on authentic (informal) assessment provides alternatives to traditional standardized testing. The strengths and limitations of various methods encompassed by the authentic assessment label are noted, and specific attention is given to portfolio assessment as one of its most popular.

The discussion of computerized testing highlights how technology has impacted the assessment area. New computer programs have increased the potential of computer-based testing to encompass test administration, interpretation, and report writing. Strengths and limitations of the computerized testing movement are noted.

The entry on criterion-referenced testing describes the unique considerations of this type of measurement. Criterion-based tests have gained in popularity with the rising emphasis placed on standards-based accountability. Specific attention is given here to understanding the differences between criterion-referenced and norm-referenced testing.

Evaluation at both the individual and programmatic level is highlighted in the subsequent entry, with attention given to special education evaluations as well as those of the gifted. The process of expanding evaluation to the programmatic level is also discussed.

The high-stakes testing movement has been influenced by political agendas. The strengths and limitations of this phenomenon are covered, and the historical context of the movement is also outlined. Specific attention is given to the impact of high-stakes testing on marginalized and oppressed groups within society.

The entry on norm-referenced testing highlights some of the characteristics of the most common types of measures administered in educational settings. Applications to particular assessment areas are noted (e.g., achievement, aptitude). Statistical concepts related to norm-referenced tests are briefly discussed.

The increasing emphasis placed upon accountabil-

ity has led to not only high-stakes testing with students but also with teachers. The area of teacher assessment focuses on different types of assessment and issues of development from novice to expert in relation to those types of assessment are discussed.

The test development segment is divided into five stages related to construct definition, item generation, administration of a test development sample, item analysis, and establishment of reliability and validity. Though primarily focused on traditional standardized testing, implications for alternative assessments are also noted.

Test theory has undergone changes since the evolution of the computerized testing movement. This entry describes classical test theory, item response theory, and contemporary issues in relation to newer theories and growing statistical sophistication.

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ACADEMIC OUTCOMES

The most often-used criterion to measure academic outcomes is school performance. Other measures of academic outcomes include behavioral indicators of attitudes toward school, school attendance, school adjustment, level of school engagement, and educational aspirations (see the website of the American Psychological Association [n.d.]) for examples of school-based intervention programs and the academic outcome measures used by them). Various members of the school system, such as teachers, guidance counselors, school psychologists, students, and individuals and groups outside the system, including parents and state and national testing services, can assess academic outcomes. This entry focuses on school performance in terms of the prominent role given achievement measures in determining school success. Other related areas of academic outcome, such as attitudes toward school, school attendance, school adjustment, level of school engagement, and educational aspirations, are also discussed briefly.

SCHOOL PERFORMANCE

School performance is a primary academic outcome. It can be measured in a number of ways, including

academic achievement and realization of goals in age-appropriate domains of development.

The terms achievement and aptitude are sometimes incorrectly used interchangeably. As a part of school performance, achievement refers to accomplishments that are a result of specific educational experiences. Aptitude, on the other hand, refers to an individual's existing psychological characteristics that may be used to predict differences in future learning under particular conditions (e.g., intelligence). Other entries in this chapter cover assessment methods, including authentic assessment, norm-referenced, and criterion-referenced testing. The following is a discussion of how these methods are used to determine educational outcomes.

Performance on achievement tests is the most frequently cited indicator of academic achievement (Alkin 1992). Students take achievement tests throughout their schooling and these measures vary in format from fixed response items (e.g., true/false and matching) to constructed response questions (e.g., short answer, essays, lab experiments). Achievement tests can be interpreted using norm-referenced interpretations (a comparison of an individual's score to that of others) or criterion-referenced interpretations (a description of an individual's performance; e.g., what they are and are not able to do successfully).

There are a number of popular achievement tests that are administered to groups or to individuals. The interested reader can consult Janet Lerner (2000) for a listing of many commonly administered criterion-referenced and norm-referenced achievement tests. The type of test given is determined by the information being sought. There are certain exams that might be seen as "gates" to the next grade; therefore, an educator might be interested in knowing which students are prepared for promotion based on some defined criteria. They might administer some form of criterion-referenced assessment to learn what level of competency each student has attained in specific areas (e.g., state standards on reading skills). Students who demonstrate a predetermined level of competency are allowed to move to the next grade. Other students are often retained automatically or provided some form of intervention (e.g., remedial teaching) to allow them to achieve a sufficient level of competence in order to be promoted.

Either as an alternative to criterion-referenced assessment or a supplemental measure, educators might also administer norm-referenced tests to determine how a student performs relative to his or her peers. Based on a student's relative standing in the normative group, educators may decide whether a student needs to be retained, requires additional support services, continues with their current course of study or should be placed in a more challenging (e.g., gifted) class. Additional information on this topic can be found in the entry on norm-referenced assessment.

Achievement tests of this type often assess particular skills (e.g., reading, math, social studies knowledge). Reading is perhaps the most critical skill for a student to develop. Their ability in this area can impact their functioning in virtually all other aspects of both school and life. Therefore, assessing skills in this area are critical and this is illustrated by the plethora of reading measures published today.

Reading is a complex task that involves various component skills. In a simple model of reading, these abilities include word recognition, vocabulary knowledge, and reading comprehension. In addition, there is a developmental aspect to its acquisition, leading to a shift in the primacy of certain skills over the course of an individual's education. In the early stages of reading acquisition, students are involved in developing strategies for effective word recognition or decoding and listening comprehension. Assessment at initial stages may focus on areas of letter recognition, phonological processing, and initial sight word knowledge. Students need to be able to recognize words in order to make sense of what they are reading. A child's listening comprehension may also be assessed at this stage. As these word recognition skills become more automatic, other abilities gain primacy in their impact on overall reading achievement. These include vocabulary knowledge and reading comprehension skills (e.g., identifying main ideas, inferential reasoning). Each achievement test may emphasize different abilities, use different formats, and assess different ages. Therefore it is incumbent upon the educator to research the test to insure that it meets the needs of the information being sought and is appropriate for the population being assessed. Popular achievement tests include norm-referenced measures such as the Woodcock-Johnson-III and the Wechsler Individual Achievement Test-II. Popular

criterion-referenced measures include Key Math-Revised and the Standard Reading Inventory.

In secondary schools, state and nationally standardized tests are administered that measure achievement and the scores on these tests are another indication of school performance. These measures include high-school exams that are administered nationally as well as tests given by the state and/or school district in various content areas. An example is the New York State's Regents Exams program. These exams may be administered at any grade level in different subject areas such as biology, American history, algebra, and so on. In the past, states such as New York have also required students who do not show proficiency in these subject area tests to eventually pass a minimal competency exam in specific skill areas such as reading, mathematics, and/or science in order to earn a diploma. It should be noted however that some states such as New York are moving to eliminate their minimal competency exams and will eventually require all students to pass more stringent subject exams in order to earn a diploma.

Other measures of academic outcome include the Scholastic Aptitude Test (SAT) and the American College Test (ACT). These tests assess a person's knowledge base in a particular subject and the ability to apply that knowledge. The SAT-II assesses students' skills in twenty-two different subject areas. It is used by universities to determine a student's level of proficiency in a given area and can be used for both acceptance criteria and placement. The other nationally administered test is the ACT, which assesses skills in four areas: English, reading, math, and science. The California Achievement Test (CAT) identifies students' educational strengths as well as their instructional needs. Colleges and universities also use achievement tests to place students in courses that correspond to their current level of achievement in a content area. The Advanced Placement Test (APT) is one such example. High-school students who score well on APTs in certain areas (e.g., Spanish, calculus) may be given college credit for their achievement and might be waived from entry-level courses in those areas.

Another form of achievement test includes those created by teachers or by the publishers of course textbooks. These are perhaps the most frequently administered tests in elementary and secondary schools. These tests cover a specific range of mate-

rial that has been drawn from class lectures, texts and other written materials, as well as the school's curriculum or standards. These tests are assigned grades by teachers and these grades are equated with academic achievement (or lack of it). Given their intent, they are closely aligned with criterion-referenced tests because they are meant to assess competency in a select area. Similar to other criterion-reference tests, all students could conceivably obtain the same score or ranking. In addition, the teacher can use this information to determine to what extent an individual student or the class as a whole benefited from what was taught. This information can be used to determine whether changes are required with respect to the method and/or pacing of instruction or the type of assessment utilized (e.g., multiple choice format, short answer, etc.). It can also identify students in need of additional support.

Grades on both teacher-created achievement tests and externally mandated standardized tests impact both grade promotion and graduation. Successful completion of current grade, grade promotion, and graduation are considered indicators of academic achievement. In New York State, for example, controversy has arisen because grade promotion is determined by a newly instituted statewide exam. If students do not pass the exam, they have to repeat their grade. This is seen by the state as a fair assessment for all students. There is concern, however, that the statewide exam is an unfair assessment for students who have fewer resources at their schools and homes (e.g., low socioeconomic status [SES]).

Another measure of school performance is students' receipt of honors and awards (e.g. acceptance in an honor society). Students who successfully fulfill the requirements of an honor or award are most often also achieving in school in other ways.

Although school performance is most often associated with grades on exams, grade promotion, and graduation, successful attainment of goals on various domains of development (such as peer interactions, learning behaviors, and acquisition of appropriate social skills) are also key indicators. Researchers have found that social and emotional development is an important academic outcome and influences other outcomes (e.g., positive peer relations has been found to influence educational attainment).

ATTITUDES TOWARD SCHOOL

Gaining an estimate of a student's motivation may be viewed as an academic outcome. Based on their educational experiences, assessment of how motivated students are to continue learning, and whether they are applying themselves in coursework, is critical information. In addition, the degree to which they believe in their ability to succeed may impact school performance. According to attribution theory, assessment outcomes that imply that results are solely or mainly due to ability may lead to lower motivation and potentially less academic success. This has been shown to affect both students and teachers (Rosenthal and Jacobson 1992). Motivation as it relates to failure, particularly with learning disabled students, can be effected by poor performance on tests.

SCHOOL ATTENDANCE

School attendance is considered to be a desirable academic outcome. Truancy is defined as a parent or child's willful noncompliance with state attendance policies and is correlated with problem behaviors and a higher dropout rate (Finn 1989). Some argue, however, that attendance should not be considered an academic outcome on its own and students should only be required to attend school until they have achieved specific educational outcomes or standards. Absences can lead to other undesirable academic outcomes, such as lower or failing grades (Duckworth and deJung 1989). Attendance also influences level of school engagement. For example, greater school attendance sustains students' identification with their school and reinforces a sense of obligation as a member of the school community (Finn 1989).

SCHOOL ADJUSTMENT

Positive adjustment to the school environment is a desired academic outcome. Behavioral indicators of school adjustment include fewer disciplinary referrals by counselors and teachers and less actual disciplinary action (e.g., fewer disciplinary actions for school fights or violence).

Another behavioral indicator of school adjustment would be a decrease in special education referrals made by teachers and counselors. Special education serves students with academic, emotional, and behavioral

difficulties. While some problems are attributed to ability or lack of skills, there may be individual (e.g., low ego strength), familial (e.g., abuse in the family, genetic disposition toward depression) and environmental factors (e.g., a high-crime neighborhood) that contribute to their problems.

LEVEL OF SCHOOL ENGAGEMENT

An additional marker of academic achievement is engagement and involvement in the schools. Engagement refers to active, goal-directed, flexible, constructive, persistent, focused interactions with the physical and social environment, in this case the classroom and the more general school environment (Furrer and Skinner 2003). Engagement in school is an important academic outcome. It is a good predictor of children's long-term academic achievement and successful completion of school. It also serves as an important indicator of supportive reciprocal relationships and reactions (e.g., students who are engaged are provided with more motivational support by teachers).

Involvement in extracurricular activities reflects students' school engagement. A number of different school-based extracurricular activities are available during high school (e.g., drama club, student council, math club). Research suggests that participation in extracurricular activities increases students' identification with school and school values (Marsh 1992) and is a contributor to educational success (Mahoney, Cairns, and Farmer 2003).

One difficulty with using extracurricular activities as a measure of achievement is that schools vary greatly in resources. Students who attend schools that are financially well supported will have access to greater activities. Consequently, schools that are underfunded often have fewer extracurricular activities for students.

EDUCATIONAL ASPIRATIONS

Educational aspirations are considered an academic outcome. For example, students' desire to attend college is seen as a positive outcome of schooling. An assessment of aptitude, however, can act as a barrier to these aspirations. Scholastic aptitude is most often assessed using the Scholastic Aptitude Test (SAT) to assess students' potential to be successful at college.

Multiple social risk factors (including factors such

as disadvantaged minority status, multiple negative life events, father absence, and maternal anxiety and mental illness) can impact students' academic trajectories (Gutman, Sameroff, and Cole 2003) and outcomes. One factor, socioeconomic status, impacts children's academic outcomes in a profound way. Students who are poor and have low socioeconomic status are more likely to experience academic problems, including a greater likelihood of lower performance on achievement tests, more course failures, more grade retentions, and they are less likely to complete their schooling (McLoyd 1998).

Assessment of academic outcomes may take many forms; however, the most prominent is educational achievement. There has been a nationwide movement toward standards-based education and this has translated into the use of tests and other "high stakes" performance indicators. Assessment of academic outcomes entails obtaining a comprehensive understanding of the unique strengths and limitations of each student learner. In addition, historical, economic, and environmental contexts must be considered in understanding the meaning of the academic outcome being considered.

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ADAPTIVE TESTING

D. J. Weiss (1983) defines adaptive testing as the selection of test items during administration of a particular measure so that the difficulty of items is tailored to the individual. This is in contrast to traditional fixed-item assessments where all examinees are given identical items. Thus, in this format the test is adapted to an examinee's specific ability level during the process of administration by selecting items based on an estimate of the examinee's ability. This procedure ensures to some extent that the majority of the items presented are neither too difficult nor too easy. As noted by Weiss, adaptive tests "mimic automatically" what good evaluators would do in an informal setting. If a question proved to be too difficult for the examinee, the next question posed would be easier. The accuracy of the assessment is based upon the presentation of items

matched to the ability of the person being evaluated. Administering items that are too easy or too difficult tell us little about the potential ability of the individual. Instead, administering items that are closely matched to the level of the examinee provide a more accurate reference point for approximating an examinee's ability.

Alfred Binet, whose interests focused on examining complex mental processes (e.g., reasoning, attention, judgment), developed the first adaptive test. School officials requested that Binet develop a test to differentiate the "genuinely dull." The Binet test was comprised of a variety of tasks involving separate ability functions to obtain an estimate of general intelligence. Binet's measure utilized a variable entry format. The first set of items administered to an examinee was dependent upon their ability level as determined by the test administrator prior to the evaluation. The items that followed were scored on an ongoing basis so that the examiner would select future items based upon past performance. Thus, the administration of the test was adapted to the ability of the individual. A variable termination criterion was employed making the length of the test dependent upon performance. Testing was complete when an individual reached a particular ceiling level (e.g., five consecutive incorrect responses) (Weiss 1983).

According to Weiss's historical review, after Binet's development of the individually administered intelligence scale, adaptive testing as a format remained underutilized. The complexity of creating and administering individually administered adaptive tests made it less popular than simply administering the same items in a group format. Modifications of adaptive testing were explored, such as two-phase tests in which the administration of a second measure was made dependent upon the individual's performance on the first. In addition, the military recognized potential benefits of adaptive testing to select recruits and aid in the placement of personnel. The military supported many research efforts that laid the foundation for the psychometric procedures needed for adaptive testing on a wider scale.

Contemporary adaptive tests utilize similar formats to the early Binet test. For example, the Stanford-Binet Intelligence Scale, Fourth Edition (Thorndike, Hagen, and Sattler 1986), incorporates a routing vocabulary test to provide an estimate of

ability that steers the examinee through this part of the scale. The Stanford-Binet is one of the most popular individually administered tests of intelligence (second only to the Wechsler Scales) used in educational settings. How an individual scores on this subtest, along with the examinee's chronological age, determines to some extent the way in which they begin other subtests on this intelligence measure. There are fifteen other subtests that comprise the Stanford-Binet. Entry levels are arranged hierarchically based upon item pairs. Determinations of a basal and ceiling level are established based upon correct and incorrect responses across these item pairs. That is, a basal is reached when an examinee passes two consecutive levels on a given subtest. A ceiling is reached when the examinee incorrectly responds to three of four items on a particular subtest across two consecutive levels. Once a ceiling level is reached the examiner moves onto the next subtest. Usage of this adaptive testing process lowers overall test administration time as well as potential frustration since the test items are geared more specifically to the ability level of the individual based upon their vocabulary development.

Wide-scale development and administration of adaptive tests began during the early 1970s and 1980s with the increased availability of interactive computers. Usage of technology made item selection and mechanical routing of subtest administration possible in an efficient manner. For more information on Computer Adaptive Testing (CAT) and Computer Based Testing (CBT), refer to the entry on computerized testing included in this chapter.

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INFORMAL (AUTHENTIC) ASSESSMENT

According to Valerie Janesick (2001) authentic assessment is defined as involving a realistic problem or task that requires the examinee to use judgment and innovation in creating a solution. Built into this assessment process are informal opportunities that allow for practice, rehearsal, consultation, feedback,

and refinement of responses as part of the learning experience.

George R. Taylor (2003) links this form of assessment with evaluation, since it can be viewed as a problem-solving process that incorporates multiple methods of collecting information about a particular individual. Informal or authentic assessment addresses some of the limitations noted with respect to standardized tests. Although standardized tests are the most frequently used method of evaluating academic performance, they do not measure all aspects of students' abilities. Informal assessment techniques, when used by teachers in classroom settings, can be a tool by which to assess the strengths and weaknesses of their students. In addition, the use of informal assessment techniques affords teachers more control of the assessment process. The techniques used can evaluate levels of the students' prior knowledge, determine skills that students may have mastered, and monitor their progress. Taylor's review of informal assessment techniques indicates that they can also aid the teacher in providing feedback to the students, facilitate making judgments, and, finally, assist in grading students' progress and achievement in specific curriculum areas. One major benefit of informal procedures is that they can be readily modified for individuals with disabilities. Janesick (2001) identifies a number of examples where authentic assessment procedures are currently used: essays and writing samples, performances, demonstrations, simulations, oral presentations, progress interviews, formal observations, self-assessment, evaluations of case studies, recordings of readings or performances, journal writing, writing folders documenting student's development, role plays and portfolios. The areas to be covered in this entry include: observation, testing, performance assessment, assessment of learning styles, analysis and evaluation of informal assessment data, and use of informal assessment.

OBSERVATION

Taylor (2003) identifies observation as a prime assessment strategy. Teachers engage in observations of their students' behaviors in the classroom on a daily basis; systematizing those observations can assist in the development of informative assessment strategies. Systematic observation can be used to

gather data that can be analyzed in order to understand, correct, or modify a situation or a students' behavior. Observational data can be classified as: narrative, checklist, and rating scales. Specific observational recording techniques include:

1. *Event*: The frequency with which specific behaviors (e.g., tardiness and absences) occur are plotted and analyzed in order to assess patterns. Interventions to change the behaviors can be implemented from analyses of the data. This type of recording can be used for individual students or for groups.

2. *Duration*: Identifies the duration of a specific behavior. A stopwatch is often used with this type of observation to assess the amount of time the student engages in specific activities or behaviors. Calculation of multiple observers' observations results in a process called interobserver agreement, which is expressed as: $\text{Total Cumulative Time/Larger Observer's Time/Smaller Observer's Time} \times 100$.

3. *Interval*: Identifies the presence or absence of the specific behavior during a certain period of time. This process incorporates the frequency and duration of a particular behavior. Recording should take place even in the absence of the specific behavior. Reliability of this method of observation can be gained by employing two independent observers. The aforementioned calculation can be used to analyze the data. However, analyses do not have to be precise, and the teacher can also classify behaviors simply as positive or negative.

4. *Time-Sampling*: The number of times a behavior occurs during a specific period of time is counted. With this method, observation time periods are divided into short, equal units. Predictions can then be made about the student's behavior.

Taylor notes, using his own recommendations and those of other researchers, that it is important for teachers to define the purpose of their observations. Prior to choosing and implementing a particular technique, he recommends identifying the following:

1. Where the observation will take place. For example, it may be useful to observe the student in multiple situations.
2. When the observation will take place. For instance, observations can take place at different times during the day.
3. How the observations will be recorded.

Taylor identifies some of the limitations of observation in informal assessment: its focus on process and description, as opposed to content, and limited specificity of the categories related to a particular dimension. For instance, behaviors are observed, but the meaning of those behaviors may not be readily discernable. Moreover, dimensions that are coded may be limited in number, from a minimum of two to a maximum of only six or seven.

TESTING

Testing instruments designed by teachers are also used as part of authentic assessment. Taylor (2003) identifies these as objective-type tests, and states they can be used to supplement or make comparisons with the results of standardized tests. They can also be used in situations in which standardized tests do not adequately capture aspects of content, difficulty, scope, or culturally sensitive material. Taylor recommends that teachers define the purpose of any test to be administered to students, relating features such as order of difficulty, directions for administration, establishment of time limits, item analyses, scoring systems, and the establishment of reliability and validity.

Taylor also recommends using a variety of test items, including true-false test items, multiple choice test items, matching items, completion items, essays, and questionnaires. There are advantages and disadvantages to each type of test item. For example, questionnaires, which consist of a set of questions designed to gather information prior to the administration of a test, may prove challenging to students with disabilities, who may not be able to respond to set questions appropriately. In these instances, teachers can use interviews to elicit information. If a student is not able to provide the teacher with all of the required information, the student's family and/or other professionals who work with the student may also be interviewed. Using interviews can provide teachers with information that will facilitate the development of tests that assess the competencies of students with disabilities. When using interviews, teachers should be aware of the importance of interpreting information received from multiple sources as objectively as possible. Inventories and subject matter tests may also be used to assess the skills of students with disabilities, and can be designed by the teacher or purchased commercially.

PERFORMANCE-BASED ASSESSMENT VERSUS AUTHENTIC ASSESSMENT

Though performance measures have been linked to authentic assessment, Taylor (2003) notes that writers have distinguished performance assessment from authentic assessment. In performance assessment, students complete or demonstrate the same behavior that the assessor wants to measure, with little or no interference involved. In authentic assessment, the student completes the behavior in a real life context that may require, as previously mentioned in Janesick's (2001) definition, development of judgments and innovative methods of problem-solving. Informal assessment, as a form of evaluation that incorporates multiple methods of collecting information about students, embodies both performance and authentic assessment (Taylor 2003).

Performance techniques are preferred by teachers because they do not require either a normative sample or standardization procedures, and also because they tend to be uncomplicated, inexpensive, and non-time consuming. Taylor (2003) notes, using information from his and other researchers' data, some of the common performance assessments that have been used in schools:

1. *Communication Skills*: Demonstrated through writing, speech, and following spoken directions.
2. *Psychomotor Skills*: Involves activities related to laboratory activities (such as dissection), and using implements.
3. *Athletic Activity*: Involves playing with a ball, aerobic movement, and swimming.
4. *Concept Acquisition*: Involves construction of circuits, selecting tools, identifying chemical substances, and making generalizations from experimental data.
5. *Affective Skills*: Involves sharing, working in cooperative groups, obeying classroom/school rules, and maintaining self-control.

Taylor (2003) cites literature indicating that alternative assessments, using informal methods, can be used to gather important information about students who are unable to conform to traditional assessment due to cognitive, social, and physical exceptionalities. These students may be enrolled in course studies that differ from the regular curriculum, and may be work-

ing on life skills curricula that will prepare them for employment, workshops, group homes, and supervised independent living situations. Alternative assessment can incorporate: (1) portfolio assessment, which includes summaries and examples of the students' learning that are checked and updated regularly, (2) ratings scales, (3) checklists, (4) questionnaires, (5) surveys, (6) interviews, and (7) self-report inventories.

Portfolios are the most widely recognized form of authentic assessment. They are used to highlight the progress of an individual's work. In most instances, the learner selects what materials will go into the portfolio to demonstrate improvement over time. For example, students may select papers, book reports, journal entries, photographs, drawings, test results, videotapes, or group projects. There should be some general learning objective that guides what the student selects. The benefits of the portfolio are that it makes use of multiple indicators of progress and provides a historical documentation of the individual's work (Janesick, 2001). The learner is responsible for providing the best representation of their experiences. The portfolio is a dynamic assessment instrument and may be updated over time.

Janesick (2001) identifies three types of portfolios: the working portfolio, the record-keeping portfolio, and the showcase portfolio. The working portfolio reflects the daily work of the student. Teachers, students, and parents may comment on aspects of the work contained in this portfolio. This portfolio enables students to be more self-aware about their own learning process. The record-keeping portfolio can be used to supplement the other portfolios, and generally contains report cards, test scores, and other such documents. The showcase portfolio is the most popular assessment tool in this area. Students select what they believe to be the best examples of their work in a single area or multiple areas. Given the advances in computerized technology, there are also electronic versions of portfolios that can be created.

Students with disabilities may, as previously mentioned, be enrolled in curricula that differ from students who do not have disabilities (Berk 2003). However, the United States' Individuals with Disabilities Education Act mandates that schools place children who require special support or learning in the least restrictive environment that will meet their educational needs. This law led to an increase in what

is known as mainstreaming, which is placement of students with learning difficulties in regular classrooms for part of the school day, or full inclusion of these students into classroom settings. With the advent of mainstreaming, it is important for administrators and teachers to meet the challenges of providing comprehensive informal assessments that meet the needs of all students.

ASSESSMENT OF LEARNING STYLES

Taylor (2003) states that authentic assessment can provide insights into individual learning style preference, which has often been challenging for teachers to evaluate in the past. He delineates three dimensions that teachers must consider when planning instructional programs:

1. *Cognitive*: How students mentally perceive and categorize information and ideas (e.g., some children are abstract learners, others have more concrete learning styles).
2. *Affective*: How aspects of the students' social and emotional personalities affect their learning. This dimension can be affected by inherited traits and environmental conditions.
3. *Psychological*: Involves students' inner strengths, weaknesses, and individual styles. Taylor presents three broad categories of learning styles: auditory, visual, and haptic or kinesthetic.

Taylor indicates that exceptional students develop learning styles using the above dimensions, but may progress at a slower rate. Thus, when evaluating learning styles of exceptional students, it is important to assess:

1. The learning rate of the student. This may or may not be readily observable and may also interfere with the student's ability to learn.
2. The techniques used by the student to organize learning materials. For example, some students organize information in broad categories; others organize information in smaller categories that are developed into broader concepts.
3. The student's need for reinforcement of a need for structure in order to facilitate learning.

4. The student's preferred modality of processing stimuli based on use of the five sensory channels: auditory, tactile, kinesthetic, olfactory, and gustatory.
5. The student's mode of expression of learned information (e.g., verbal and nonverbal).
6. The quality of the student's method of processing learned information.

USE OF INFORMAL ASSESSMENT

Instruction and grading are two methods of using informal assessment data. For instruction planning, teachers should focus on developing evaluating techniques that meet the students' needs. Evaluation of the students' achievement should be based on the measurable and observable objectives of a specific instructional program. Taylor (2003) cites researchers who recommend rubric assessment as a method of identifying evaluation criteria, describing qualitative differences in students' performances, and indicating whether the evaluative criteria can be holistically or analytically applied. Grading can be used to assess students' strengths and weaknesses in content subjects. In instructional planning, grades can be used for administrative purposes, to give students feedback and guidance about their progress and achievement, and to motivate students. Students with disabilities may or may not require modifications of grading procedures. Administrators should develop effective reporting procedures for informing parents of the progress of students with disabilities. Administrators must be familiar with state and local regulations concerning grading practices, and specific types of reporting techniques, including: anecdotal records, work samples, checklists, newsletters, daily/weekly report cards, telephone calls, award systems, using cameras, videotape, and computer technology and, finally, home visits. Communicating assessment data to parents of children who are not disabled would encompass reports on academic performance, social/emotional development, physical development, and classroom behavior (Taylor 2003).

OTHER USES OF INFORMAL (AUTHENTIC) ASSESSMENT

The choice of informal assessment instruments should be appropriate for the student being evalu-

ated. Taylor (2003) recommends that teachers use the following strategies to assist them in choosing and developing appropriate informal assessment instruments:

1. Consider the skill areas to be assessed and identify the informal testing format that will be used.
2. Assess whether or not the content area being evaluated is appropriate to the student.
3. Assess the specific purpose of the informal assessment.
4. Determine what accommodations may be needed.
5. Assess the availability of environmental resources to provide adequate accommodations to students.
6. Evaluate the similarity of informal test content to classroom tasks.
7. Evaluate the relationship of the tests to objectives and mandated standards.

In addition to the types of assessment previously mentioned, Taylor (2003) notes the following approaches: curriculum-based assessment, ecological assessment, task analysis, dynamic assessment, and assessment of learning style. These types of assessment can yield important information about students in context (e.g., cultural, linguistic, and socioeconomic contexts).

ASSESSING STUDENTS WITH DISABILITIES

According to Taylor's research, assessing students with disabilities in educational settings serves four primary purposes:

1. Screening and identification of students who may be experiencing delays or learning problems.
2. Determining the eligibility of a student who is disabled for special education services and diagnosing the student's specific problems and/or disability.
3. Providing program development and placement appropriate to the student's special needs.
4. Evaluating the student's progress.

When developing informal assessment techniques for students with disabilities, teachers must assess the student's level of proficiency in a particular subject. Teachers must also consider the specific disabilities of the students to be tested and assessed (Taylor 2003).

Informal assessment techniques in the classroom can provide teachers with a rich source of information about students' competencies, academic potential, and placement needs. Indeed these same methods may be used to evaluate any learner. For example, portfolio assessment has been used in teacher education programs as well as many work settings. Despite the benefits of using authentic (informal) assessment methods, there have been those who have criticized their use. The politics of assessment have focused on the need to have a standardized score to represent an individual's abilities. Gains are recognized best in terms of score increases. However, proponents of authentic assessment like Janesick note the importance of promoting assessment in a meaningful context and enabling learners to participate in the process. In addition, they note that assessment must be an ongoing process and immediate feedback of the results is critical.

Ellen L. Short

COMPUTERIZED TESTING

There is no question that computer technology has had an immense impact on numerous fields of study. The field of educational assessment is no exception. Technological advances have led to computer-based testing (CBT) and computerized adaptive testing (CAT). Since the advent of computers in the 1970s, there has been a great deal of focus on computerized measurement. This level of interest is similar to the popularity of paper and pencil measures in the 1940s and 1950s. Howard Wainer's (1990) historical review reports that in the 1970s computers were used primarily to score tests and process score reports. In the 1980s the use of computers extended to administration. Currently, computer-based administration, scoring, interpretation, and report-generating programs are available for many of the most popular assessment instruments. The advent of computers has had major implications for the types of measures that could be developed as well as the efficiency with

which they can be administered, scored, and interpreted. It is now much easier to have individualized adaptive systems of item administration.

C. Sue McCullough and Daniel C. Miller (2003) define computerized assessment broadly indicating that all procedures that involve computer assistance in evaluating educational and behavioral goals are part of this area. Under this broad umbrella are standardized measures, questionnaires, interviews, automated test scoring, analysis and interpretation programs, computer-adaptive testing, instructional delivery systems, technology assistance, computer simulations, and electronic portfolios.

As noted by Richard M. Luecht and Brian E. Clauser (2002), computer-based testing represents a major step forward in the assessment process, where "Every keystroke or mouse click, every referencing action, every response, and every elapsed unit of time is a possible source of valid information" (p. 69).

DEVELOPMENT OF COMPUTER-BASED TESTS

The development of CBT parallels the process described in the test development section of this chapter. For example, large numbers of items must be generated based upon knowledge of the identified construct to be tested. These items are then evaluated based upon "program requirements for levels of content, difficulty, and fairness" (Parshall 2002, 119). Items that appear to perform well are incorporated into the test bank contained in the test program. Item statistics such as difficulty, discrimination, and distractor performance are taken into consideration.

Computer-based tests are also able to quantify more succinctly the speed at which examinees respond to items. On traditional paper and pencil, test speededness was based upon how many items remained unanswered at the end of the examination period. With CBT, response times can be generated for each item and can provide an overall average item response time. It is important to note, however, that speededness may be impacted by language, familiarity with computers, and cultural perception (Schnipke and Scrams 2002).

COMPUTER-ADAPTED TESTING

A major application of computerized testing is in the creation of adaptive testing. Large numbers of items

can be stored in a computer database and for a particular given area; the computer can select and administer items tailored to the abilities of the individual taking the test. The computer program determines what subsequent questions should be asked of particular individuals taking the test based upon the ways in which they answer previous items. For example, a student who answers basic math questions (i.e., addition, subtraction) incorrectly would not be administered higher-level questions involving complex calculus. A major benefit of adaptive testing is that tests can be tailored to specific response patterns, therefore, examinees will most likely be more motivated and testing time will be shorter.

McCullough and Miller (2003) note that item response theory (IRT or “latent trait theory”) is the foundation of computer-adapted testing. As discussed in the test theory entry of this chapter, IRT relies upon the item characteristic curve that identifies the probability of a correct response to a particular test item as a function of the examinee’s ability in that particular domain.

INSTRUCTIONAL DELIVERY SYSTEMS

Another application of computerized testing is focused on instructional delivery systems (McCullough and Miller 2003). These include: computer-based instruction, information-processing tools, and concept mapping. Computer-based instruction works in a parallel fashion to computer adaptive testing. The computer stores information with respect to an individual’s level of mastery of a particular instructional program. Instruction regarding a particular concept may be broken down into subunits or expanded, based upon the examinees’ test performance on particular units. The computer can track and summarize each student’s progress. Benefits of computerized instruction programs are that students can move through material at their own pace and immediate feedback is provided, which can increase student motivation and eventual mastery of material.

COMPUTERIZED ADMINISTRATION AND ANALYSIS

Many tests are administered and analyzed through the use of computers. Given the capacity of comput-

ers to perform statistical operations automatically, one strength of computerized testing is the amount of information that is generated based upon item responses. For example, factors scores, standard scores, standard deviations, and stanines are often generated automatically. Most major tests in existence currently provide some form of computerized assistance in terms of scoring. Even projective measures (e.g., the Rorschach Inkblot Test) that do not generate scores per se provide scoring programs to assist the examiner in interpretation. It should be noted that in some cases the examiner must still record responses and score items given the individualized nature of the measure (e.g., individual intelligence tests). While automated scoring methods are common with respect to multiple-choice tests, computerized scoring has the potential to ease the evaluation process for performance-based measures that require a degree of human judgment. Scoring systems may be devised to reduce the number of raters/ graders needed to evaluate a performance-based measure, thereby making it more cost effective (Dodd and Fitzpatrick 2002).

In addition to test scoring (e.g., storing information pertaining to correct and incorrect responses), the computer also provides a calculation of raw scores and standard scores and compares scores to test norms provided by the publisher. The computer is also able to generate information such as percentiles, stanines, normal curve equivalents, grade equivalents, IRT scoring patterns, and factor scores. On some achievement tests (e.g., the Woodcock-Johnson Achievement Battery-Third Edition) the information provided is based on age norms and/or grade norms. Additional information provided by certain measures may include achievement-aptitude discrepancy formulas to help determine whether an individual may have a processing disability.

COMPUTERIZED INTERPRETATION

Some test developers also provide computerized interpretation programs. These programs contain decision rules that take into consideration particular variables deemed important by the test developer (e.g., age). The program also contains criterion rules that lead to interpretive statements and a computer generated report. The computer stores a database of

qualitative statements that are attached to particular scores or score configurations.

McCullough and Miller (2003) note that computerized interpretation programs have been challenged in the following areas: (1) comparison with trained examiners, (2) legal and ethical issues, (3) validity of computer-generated interpretive reports, and (4) examiners over reliance on the computerized report rather than clinical judgment. More information regarding these concerns is provided in the discussion of computer-based testing limitations below.

The benefits of computerized interpretation are numerous. To begin with, the examiner saves valuable time. There is potentially greater accuracy in scoring although errors in data entry can occur. In addition, interpretations may be less biased since the computer will not be influenced by examiner biases that impact the accuracy of the assessment (e.g., stereotypes about a particular race or ethnic group, negative referral information, or socioeconomic status). However, it should be noted that bias may still be present if the administration or scoring of the test was systematically flawed. In addition, the computer can search through a vast number of potential interpretive possibilities in a systematic manner that exceeds the capabilities of an examiner. It should be noted that computerized interpretation programs may also be adjusted to include cautionary statements that the examiner can take into consideration when making judgments about the results obtained. One example may be in terms of application of the test to members of marginalized or oppressed racial/ethnic groups or linguistic minority groups (e.g., English as a Second Language). In addition, the programs often integrate current research and may note different scoring patterns for particular groups that should be considered in the final interpretation. The computer may also “red flag” potential areas of concern that the examiner can consider when completing an evaluation report.

INTERACTIVE COMPUTER SYSTEMS

Anne Anastasi (1997) reported the growing complexity of computer applications in testing based on interactive computer systems. These systems enable the examinee to have direct engagement with the computer system using response stations. For

example, multimedia and computer interactive technologies enable the presentation of realistic situations while allowing for various response options by examinees. She noted that such formats have been used in education and career decision-making assessment practices. In these instances the computer stores information about the individual along with data regarding educational programs and occupations. The computer then matches the individual with different occupational and/or educational databases.

CONCERNS REGARDING COMPUTER APPLICATIONS IN TESTING

Major professional organizations have developed ethical guidelines addressing usage of computers in testing. The testing standards endorsed by the American Educational Research Association, American Psychological Association, and National Committee on Measurement and Evaluation includes discussion of appropriate computer test applications.

Anne Anastasi (1997) noted literature indicating two major concerns: computerized testing in terms of score comparability and narrative interpretive scoring. With respect to the former, given that the same test may be administered in a paper and pencil format as well as in a computerized format, the comparability of scores needs to be addressed. These two testing formats need to be equivalent (e.g., an examinee would demonstrate the same level of ability in either format) in order for the norms to be applied appropriately. In addition, questions regarding reliability and validity may also arise given that these psychometric concepts are usually addressed based upon one format or the other. Examinee experience with computers may also contribute to test performance. Therefore, groups with greater access to technological resources may score higher than those without much computer exposure.

Questions have also been raised with respect to the issue of interpretive reports. Computer packages must integrate information regarding the validity, reliability, and other technical features of the tests. Interpretive statements are generally derived based upon programmed cut-off scores and these must be theoretically and empirically supported. Some computer programs are based upon judgments and anecdotal information regarding the decision-

making process of experts in the field. An example of these application programs may be seen in computer software designed for clinicians making diagnostic decisions. It must be made clear to the consumer how these experts were identified and used in the development of the program. In addition, computer-generated interpretation reports should be used in combination with clinical judgment. The computer takes into consideration only contextual variables for which it was programmed; therefore, it cannot replace the clinical skills of a competent practitioner.

FUTURE POSSIBILITIES FOR COMPUTER-BASED TESTING

The potential of computer-based testing remains to be seen. The possibilities appear endless as researchers such as Anastasi (1997) note that many of the current limitations may be overcome in the near future. In addition, the computer may be able to accommodate and integrate vast arrays of knowledge regarding an individual examinee—behavioral observations, historical information, and so on. McCullough and Miller (2003) report areas that will characterize future trends in computerized assessment: The Internet will play a bigger role in the administration and scoring of computerized tests and scoring materials. Examiners may be able to download measures as well as scoring information directly from the Internet. Increasing technological sophistication will enable the measurement of not only particular test outcomes but also the process of decisionmaking and problem solving. Integration of other sources of information—quantitative as well as qualitative—will be more readily available.

Lisa A. Suzuki and John Kugler

CRITERION-REFERENCED TESTING

Educators use tests for a variety of purposes, including determining proper placements of students, planning appropriate programs of instruction for them, and evaluating the effectiveness of educational interventions. In making these decisions, teachers and administrators are often concerned

with the actual academic competencies a person has attained. Criterion-referenced tests (CRTs) are “designed expressly for interpreting an individual’s performance in terms of what he or she can and cannot do irrespective of the performance of other students” (Berk 1984). These types of tests may be referred to by a number of titles, including “criterion-referenced,” “competency tests,” “mastery tests,” and “standards-based tests” (Hambleton and Zenisky 2003).

Since the 1960s there has been growing interest in the type of information that can be obtained from CRTs of educational competencies (Nitko 1984). In more recent years the standards-based movement has prompted test publishers to develop an increasing number of measures that assess an individual’s competencies, rather than focusing primarily on a student’s standing when compared to a normative group (see norm-referenced testing entry).

In fact, CRTs were developed to specifically address some of the shortcomings of the norm-referenced tests (NRTs), particularly in the area of instructional planning. CRTs are meant to provide more detailed and specific information about what specific skills a student possesses and what skills they need to learn next. Since CRTs are measures used to assess levels of competency or proficiency in given areas of ability, they can provide more information on what exactly the examinee knows and what they don’t know. With respect to academic achievement, this can include various skills of reading, mathematics, writing, as well as content area knowledge or application and higher cognitive processes.

Ronald Hambleton and April Zanisky (2003) cite several key issues related to understanding the purpose of CRTs, their development, proper use, and interpretation. Among these issues are: (1) understanding the difference between criterion-referenced and norm-referenced tests, (2) reviewing methodological issues of validity and reliability, and (3) determining how scores from CRTs are provided (e.g., in reports) and used appropriately by the consumer of these measures.

While NRTs are discussed in greater detail in a separate entry within this chapter, one essential difference will be highlighted here. A significant difference between NRTs and CRTs is the purpose of each type of test. NRTs are primarily developed and used

to place individuals along a normal curve in comparison with others in a sample population. In general, a NRT is designed to achieve a range of scores in order to maximize the separation of individuals along a continuum of some ability. How well each person does in the normative sample will affect the standing of others in the standardization group. The question asked by a NRT is, where does this person place as compared to his or her peers, usually on broad measures of some ability or abilities. CRTs, in contrast, are designed to assess a person's competence in a more specific content area. In addition, how well others do on the CRT will not change the interpretation of that person's performance on it. The score achieved on the CRT reflects the individual's level of competence in some domain and is unaffected by the performance of others. The information sought on a CRT concerns a person's level of performance in some specific content domain.

TECHNICAL ISSUES RELATED TO CRITERION-REFERENCED TESTS

There is overlap with respect to the process of development of NRTs and CRTs; These include the importance of standardization of administration instructions and scoring criteria and the effects of test length on reliability, among others. These issues are discussed more fully in the chapter entry on test development. At the same time, technical differences do exist. The following discussion will examine issues of test format, item type, reliability, and validity as they relate to CRTs.

Test Format

A. J. Nitko (1984) notes that there are numerous types of CRTs that have been developed. The format of the test is based in part on the purpose of the test (e.g., has mastery been attained; what skills have been acquired) and the demands of the content domain (e.g., mathematics; copying alphabetic letters) from which items are drawn. This discussion of the variety of types of CRTs that could be developed will not be exhaustive, but will highlight some of the most common formats.

One type of CRT can be developed to determine a person's skill in responding to material at various levels of subject difficulty. The information sought is the

person's functional level with respect to the highest point or level of item difficulty they can achieve. For example, a reading test might be developed with passages of increasing difficulty. The score might be the highest point at which a person can successfully read and respond to various comprehension questions. The results could then be used to determine the appropriate instructional level of reading text for that individual.

A second type of CRT might be used to measure a person's level of proficiency in an area such as psychomotor ability. On these tests, the scores are on a continuum that starts at a beginner's level and goes up to the level of master. The tasks on the test are designed so that more proficient individuals are able to complete a task more efficiently due to greater speed (e.g., more quickly completing certain steps in the task), or changes in how they complete the task (e.g., skipping certain steps that were necessary at earlier stages of learning) or needing less attempts in completing the test (e.g., one pass through the task versus several tries to complete the task). Scores on this type of task measure the increasing ability of the person to perform the task more accurately and efficiently. An example might be tying one's shoes. Children who have become proficient at it can engage in the motor routine quicker, may not need to talk themselves through it (skipping self-verbalizations) and be able to do it well in one attempt. A child just learning the skill would need more time, might need to verbalize/sub-vocalize directions and might need several tries to complete the task.

Another type of CRT assesses skills or content domain involving a fairly consistent hierarchy of skills. That is, the items fall on a continuum on which competency on item A must be achieved before you can succeed on item B. The information obtained by this task indicates that person's current position in the sequence of learning that task. The results can also indicate what they need to learn next. A CRT that assesses a child's performance on a developmental domain would be an example of this type of measure. For example, most children need to walk before they can hop or will learn to speak in short "telegraphic" phrases before uttering complete sentences. Measures of readiness skills for kindergarten might also be constructed using this format.

In constructing CRTs, early test developers reviewed the content domains of the skills being evaluated. They then attempted to define these domains by writing

clear behavioral objectives. The thinking was that such objectives would provide a clear picture of the skills to be assessed. These objectives would then provide the template for the items to be included in the instrument. However, these initial endeavors proved difficult because the objectives led to measures that were not written in a manner specific enough to help plan instruction or even provide accurate score interpretation. Since this was the main goal of these measures, these efforts eventually fell out of favor.

More recently, “the trend in CRT practices has been to write objectives focused on the more important educational outcomes” (Hambleton and Zenisky 2003, 380). This has led to the development of objectives that take into account the curriculum standards of a particular school, district, or state. As part of this development, more effort is put into generating a variety of item types that might be used to assess a particular outcome. Measures created in this manner are more specific in their intent and are therefore more useful for a particular purpose, such as assessing how well someone has met the fifth grade mathematics standards set by a certain school district.

Item Development

In order for a CRT to be useful and accurate, the items on the measure must be drawn from a very narrow and well-defined domain. The more specific the group of items, then the more precise will be the interpretations of scores on the test. As a general rule, the test items have to sample areas of the specified domain to provide sufficient confidence that the person is in fact proficient.

Once the content area has been clearly delineated, test developers explore ways of assessing that domain. In developing a new measure, test developers generally have two options. One option is to identify and use an existing bank of items appropriate for assessing the area of interest. These items may be modified based on the type of item to be used. The other choice is to build a new item bank from which to draw material for their measure. The new item bank is often developed by a team of people, including experts in that particular area as well as educators who are teaching in that content area. Their work involves matching the goal of the assessment to a particular item type. Hambleton and Zenisky (2003) list seven different types of items that might be used

on CRTs: multiple choice, selection/identification, reordering/rearranging, substitution/correction, completion, construction, and presentation. They suggest that these seven types might be divided into two groups, with the first four response types seen as “selected” items because information is available in the test (e.g., multiple-choice responses) for the examinee to choose. Responses to these item types may include some degree of both guessing and cued recall based on what is provided on the measure. Although primarily used in the past to tap more basic skills and abilities, they can also be written to tap certain higher cognitive processes. The latter three item types are viewed as “constructed-response” items because the examinees must, to a greater degree, generate information from their own knowledge base with limited information that might provide cues to the answer.

In the development of a criterion-referenced test, efforts may also be made to create a test that can be compared with similar measures already in use at different levels (e.g., grade or age) over time for the same individual. As Hambleton and Zenisky (2003) point out, efforts are being made to statistically equate a number of the licensing tests and other state mandated exams. This is being done in part to allow those administering the tests to measure growth or change in students or individuals over time and from one measure to the new one.

Test developers may also make use of “anchor” test items. That is, several items from the original measure of a known difficulty level are readministered along with the new items on subsequent tests to determine changes over time/development and how well equated the second measure is with the first. They note that a sample size of approximately one thousand examinees and a pool of about ten to fifteen items are often adequate for equating the forms. However, samples of greater size coupled with a larger number of anchor items could increase the confidence in the equivalence of the forms (Hambleton and Zenisky 2003).

Reliability

In determining the reliability of a CRT, test developers may utilize various methods. The main issue is the consistency of group placement (e.g., beginner, advanced) by a given measure. Unlike many NRTs, cer-

tain reliability methodologies may not be as readily available to developers of CRTs. There are often difficulties inherent in trying to develop a parallel form of the test such as the time and expense involved in creating such a measure, particularly one that may not be given on a national level. In addition, test-retest methods may be impacted adversely by the examinee's continued participation in a learning situation that is intended to increase scores for the individuals taking the test. One method currently used to establish reliability (split-half) involves taking a sample of half the items and using them to determine a person's placement in one of several groups (e.g., novice, proficient, advanced). Then the second half of items from the same test is used to reclassify the individuals into groups. The level of agreement between the two classification tables is used as a measure of internal reliability. The aim is to have people consistently placed in the same category (e.g., proficient) both times from the items obtained in this one assessment.

Content Validity

Assessing a measure's content validity is important for both CRTs and NRTs. However, the main purpose of a CRT is to specify a particular domain of content and assess it based on a particular classification paradigm. One difference is that the NRT tends to utilize items drawn from a broader sample of content as compared to the more narrow range of items found on a CRT. Due to the fact that content drives the development of a CRT, it is clear that attaining appropriate content validity is crucial to the success of the measure. Experts in the area from which the items are drawn (e.g., physics) often serve as judges to determine the content validity of a CRT. In addition, individuals from a particular group (e.g., teachers) with knowledge of the particular course of instruction or standards are also often consulted to help determine if the measure has adequate content validity. As with a NRT, items that do not appear relevant or might be confusing with respect to wording or possible responses are eliminated or revised in the course of a content validity review.

Criterion and Predictive Validity

The outcomes of the limited sampling of tasks are meant to provide an accurate measure of the person's

proficiency that can be interpreted to predict the broader area being assessed. In many cases, this involves assigning individuals to a particular level of proficiency based on their performance on the CRT. That classification result is then compared to the classification derived from another source (e.g., teacher ratings of a student's skills). The closer the match between the two tables, the more the test is considered a valid measure of that ability or skill. If the agreement between the measure and other assessments of that person's classification is low (and hence the validity is low) test developers may wish to examine how the external sources arrived at their judgments. They may also explore the item type to determine if it is measuring the skill in a manner similar to how the external sources might evaluate it. For example, if the external sources use completion-type items to assess their student's skills and the CRT used a multiple-choice format, this could conceivably lead to different results in classifying levels of proficiency.

Scoring and Interpretation Issues

A well-developed CRT has the advantage of results that are readily interpretable in terms of specific performance standards. Since it is intended to sample a more limited area of ability, it can provide better generalizations of a person's skill or ability than a NRT. For example, a NRT may tell you that a student is average for his grade in mathematics when compared to his peers. However, it does not readily inform about his computational abilities. However, CRTs that assess basic math skills that have been clearly defined can allow for stronger generalizations regarding a person's performance in a defined area of mathematics. They may also provide information on how close a person is to attaining a certain level of proficiency. In addition, results may also be used to determine how much progress an individual has made and/or the benefit, in terms of skill gains, of an educational program (e.g., an intervention in reading or a new mathematics course). CRTs may also be more sensitive to changes in abilities than many NRTs. This might allow better assessments of both a person's progress with a certain educational approach or intervention as well as the effectiveness of a particular program for a group.

John Kugler

EVALUATION

Evaluation in educational settings takes place at a variety of levels, both individual and programmatic. At the individual level, educational measures are used to identify particular characteristics about students and teachers. At the programmatic level, evaluation methods are used to examine outcomes, for example effectiveness of interventions. Given that other portions of this chapter address teacher assessment and the usage of various forms of measurement with students, the focus of this entry will be on the process of evaluation. In particular, the usage of multidisciplinary assessment practices in determining special education and gifted placements as well as program evaluation will be addressed. A central focus will be on evaluation of students with special needs given the important roles tests have played in determining educational classifications, placements, and services.

EVALUATION OF STUDENTS WITH SPECIAL NEEDS

The process of evaluation in this area begins with the identification of students who are having behavioral and/or academic difficulties in school. Parents, teachers, or other school personnel (e.g., administrators, counselors) are often the first to identify potential problems and concerns. This may be based upon personal observations or performance based on academic measures.

The next step in the process involves engaging in prereferral interventions, for example: further investigation of academic records, more intensive observations, family meetings, engagement in at-risk or prevention services, and teacher-based classroom observation. Determination of appropriate prereferral interventions often involves a multidisciplinary team. If at this stage, the team considers the problems to have been alleviated, no further evaluation is supported. However, if concerns continue to be noted then the team may determine that a more intensive evaluation is needed. This involves a multidisciplinary assessment involving different types of evaluation including: intelligence, achievement, psychological/emotional, and language. These involve a team of professionals with expertise in a variety of areas (e.g., a school psychologist, edu-

ational evaluator, school social worker). The types of evaluation tools include observation, teacher interviews, student interviews, dynamic assessment, standardized assessment, neuropsychological assessment, medical assessment, personality assessment, and adaptive behavior assessment.

Observation

Observation of a child in the educational environment can provide valuable information regarding how the child functions on a daily basis and can offer important clues as to why they are failing. As such, it can contribute to a clearer understanding of the source of the child's failure. This might include aspects of the classroom environment that impact learning (e.g., where the child sits, any distractions in the class such as noise, the class size, organization of the class, time of day when the class occurs—whether the child is fatigued late in the day, for example, or high energy after lunch). Observations can also note the child's on-task behaviors, attention, and quality and types of interactions with the teacher and students.

Teacher Interviews

An interview with a child's teacher can provide valuable information about a student's functioning. The teachers' perception of the child's functioning might include not only how she is doing, but also information on the teacher's attempts to help the student, potential reasons for failure, comparison of that student with her peers, and what competencies the student appears to possess and what is lacking. In literature on consultation models, it has sometimes been noted that when teachers are able to clearly identify the academic problem they are then more readily able to generate some possible solutions or interventions. This can allow them to better understand what is happening with that individual and intervene more effectively with, or sometimes without, further evaluation.

Student Interviews

It is often helpful to speak to the individual experiencing the educational problem to obtain his perspective on it. Although it can be helpful at all ages, it potentially becomes increasingly useful at the higher grades (i.e., upper middle school and beyond). The

information they provide should help in determining what other measures, if any, will need to be administered. Issues addressed in the interview can include but are not limited to, attitudes toward education in general, feelings about specific subjects, motivation to succeed, self-efficacy, the quality and quantity of support in the individual's environment, the knowledge of and use of various study skills, organizational skills, personality factors (e.g., depression), and future goals and plans. This information can be collected through informal conversation or structured interviews, checklists, and/or rating scales, to name a few.

Dynamic Assessment

Many traditional norm-based assessment models tend to focus on collecting data that is primarily static in nature. In such a situation, a student provides answers to a series of questions. His or her score is marked as correct or incorrect and is seen as a measure of what they have learned. From this measure it is assumed that future performance can be predicted in terms of what he or she could learn. However, some test developers have created measures aimed at actually assessing a person's learning potential. To address questions of process, a method called dynamic assessment was developed (Feuerstein 1979). In this model, students' skills in some area are assessed. They are then taught in that area and then reassessed to determine their response to teaching. This method can provide an important piece to the evaluation process, revealing what type of instruction works best and how well they do with new learning. More recent assessment models have also introduced a concept focused on a person's response to treatment protocols. In this model, a person's response to an intervention provides information as to the type of learning problem that is experienced. A child who responds very well to educational intervention may not be viewed as being impaired compared to a peer who does not respond as well to the same treatment. The former student's academic problems might be viewed as due more to educational opportunity while the latter may have some form of learning disability.

Standardized Assessments

Standardized assessment instruments are used to provide information regarding an individual's standing

relative to a group. Measures of intelligence as well as academic achievement are included in this group. Discrepancies between measures of aptitude and achievement were traditionally used to determine classification of learning disabilities. However, there has been a recent trend toward identifying the presence of any processing deficits that may impact learning (for example, phonological processing problems or visual-spatial). Knowing more about a student's processing abilities may prove more useful and relevant with respect to planning educational interventions.

Neuropsychological Assessment

The 1990s was designated the "Decade of the Brain." Neuropsychological measures look at brain-behavior relationships and can provide useful information for educational decisionmaking. In particular, students who have experienced some form of traumatic brain injury benefit from an assessment of their neuropsychological strengths and needs. Information from such an evaluation can inform individualized educational program development to address areas such as memory difficulties, issues of attention, and concentration, language processing problems, and/or weaknesses in fine and gross motor skills. There are a number of measures currently in use, including batteries such as the NEPSY: A Developmental Neuropsychological Assessment, the Halstead-Reitan Neuropsychological Battery for Older Children, the Luria-Nebraska Neuropsychological Battery-Children's Revision, and/or more specific tests such as the Rey's Complex Figure Test or the Wisconsin Card Sorting Test. In addition to assessing students with traumatic brain injury, neuropsychological measures can also be used with students with other learning disorders to better understand their needs. Students with dyslexia, Asperger's Syndrome, autism, and attention deficit disorder may all have significant cognitive processing concerns that can be identified by tests of this type. As with students who have experienced a traumatic brain injury, information from these measures can lead to better academic program development for these students.

Medical Assessment

In the early stages of assessing students experiencing academic problems, educators and clinicians attempt

to rule out problems in basic sensory areas (i.e., visual and hearing). Research has shown that children who experience otitis media can have intermittent hearing loss. This can effect language development and the acquisition of good auditory processing skills. Other medical issues to be explored include students' ability to control their behavior, attend to lessons and to maintain an appropriate level of alertness during the school day. These abilities can be impacted by a number of factors, including medical conditions (e.g., disorders of the central nervous system) and psychological ones (e.g., depression).

Personality Assessment

Personality assessment may be conducted if there are questions concerning the impact of mental health issues on academic performance (e.g., depression, attention deficit disorder). It may also determine if there are effects from mental health issues resulting from academic difficulties (e.g., poor self-esteem, learned helplessness). Personality assessment can provide important information in addressing all facets of the student's difficulties. Examples of some measures used for this assessment include rating scales, interviews, and projective tests.

Adaptive Behavior Assessment

Educators have long recognized that some students may struggle academically and yet still are able to function in the environment outside of school. Adaptive behavior assessments serve several purposes. They have been used to differentiate specific academic delays from more global limited cognitive functioning. They have also been used to assess important areas that may not be deemed academic, but which impact overall school functioning. These include social skills and independent living skills. Educators who work with students with special needs, particularly developmental disorders (e.g., mental retardation, autism) or significant emotional problems, may benefit from the information such scales provide. Examples of these types of tests include the Vineland Adaptive Behavior Scale and the American Association on Mental Retardation (AAMR) Adaptive Behavior Scale. Both scales collect information in an interview format with individuals familiar with the person being assessed (e.g., caregiver, teacher).

Based upon all of the data gathered, a determination is made as to whether or not the student is eligible for special services (e.g., special education). If the evaluation team determines that the individual does not meet the criteria of a handicapping condition, then no further services are provided and the student will remain in the regular education setting. If the results of the evaluation indicate that the student meets the criteria for a particular educational classification (i.e., special education) then steps will be taken to provide the most appropriate placement and this decision would involve input from school personnel, family members, and student advocates. Educational services are provided based on the type and severity of the individual's needs. There is a continuum of services offered by each school district. Services may range from the child staying in his or her class and the classroom teacher working with another teacher trained to provide special education to a more restrictive option where the child is pulled out of the classroom to receive additional help one or more times a day. Further down the continuum, a child might be placed in a self-contained classroom out of the mainstream of regular education services. Children placed in special classes may be given opportunities for participation in mainstream classes for content area academics (e.g., mathematics) and/or nonacademic areas (e.g., physical education). In some circumstances, individuals are placed in more restrictive settings such as special programs in separate schools or programs run in hospital settings (e.g., psychiatric programs).

EVALUATION OF GIFTED STUDENTS

Giftedness has generally been determined based upon multiple evaluation criteria. These include: scores on standardized intelligence/achievement tests, nominations by teachers, parents, peers, and the students themselves, academic grades, portfolios, and information obtained through inventories and checklists addressing characteristics associated with giftedness. Different cut-off scores, rating instruments, and nomination procedures may be used in various school districts. In addition, there are often differences in weighting placed upon areas of the evaluation depending upon school policies. Despite the multidimensional factors contained in this evaluation process, concerns have arisen regard-

ing the evaluation procedures involved in identifying gifted students. In particular, examination of numbers of racial/ethnic minority students tends to be disproportionately low relative to the overall representation in the school age population. Overreliance on standardized aptitude tests in the determination of giftedness has been identified as contributing to this discrepancy given the racial/ethnic hierarchy noted on various intelligence and achievement tests. For example, black and Hispanic students tend to score lower than whites on most standardized measures of ability.

PROGRAM EVALUATION

There are a number of program evaluation methods that can be employed in educational settings to address a variety of purposes. The general goals of a program evaluation include: (1) to determine how resources should be allocated to meet educational goals, (2) to verify implementation of planned programs, (3) to examine outcome data with respect to program goals, (4) to provide comparison of outcomes based upon different intervention programs, (5) to determine which programs provide the most-needed services, (6) to obtain information to maintain and improve quality of services, and (7) to monitor for unplanned potential outcomes (Posavac and Carey 1997). In particular, the major evaluation methods often cited are needs assessment, process evaluation, outcome assessment, and efficiency examination. Attention needs to be given to whether the program was developed to address short-term needs, long-term needs, and/or potential needs of a particular population (e.g., at-risk students). Evaluation data may be obtained through examination of records or preexisting documents (e.g., student records), test measures (standardized or informal assessment tools), or qualitative methods (e.g., interviews).

Program evaluations often involve multiple sources of information from interested parties or stakeholders. Initially, a needs assessment may be performed to determine what areas of intervention are deemed necessary. Based on this information programs may be selected or developed along with determining methods of evaluating program effectiveness. These methods may include formative evaluation in which results are used during the intervention to obtain

feedback. This information may be used to modify current intervention practices or redirect resources. This differs from summative evaluations where methods are used to determine the overall effectiveness of a particular program and to make final judgments (e.g., post testing, exit interviews).

The process of evaluation takes many forms in educational settings. The various measures and methods used span a variety of disciplines and involve many educational stakeholders. It is important to think of evaluation techniques and methods as having an impact not only at the individual level but also the programmatic level.

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HIGH STAKES TESTING

Public scrutiny and debate about high standards in education and accountability have led to the creation of high stakes testing in the United States. High stakes testing is defined as the usage of measures whose results have serious consequences for the test taker or other stakeholder (e.g., administrators, school district personnel). Results of these measures may be used to determine whether a student is promoted to the next grade or whether they graduate. Additionally, test scores are used to judge the quality of a particular school or district and may be used in funding decisions and determination of leadership (i.e., principal positions) at particular schools.

Advocates of high stakes assessment indicate that these measures provide indicators of student achievement, school quality, and an index to be used for accountability in the educational system (Jones, Jones, and Hargrove 2003). However, attention must be paid to schools that have been neglected in the past. Documentation of test scores by schools and districts in newspapers and on websites has brought public attention to underserved populations and schools that are failing. In addition, high stakes tests are often in a multiple-choice format and therefore are viewed as economical because they can be administered in a relatively short period of time to large groups of students. High stakes tests may be computer scored thus allowing statistical information to be readily obtained with

respect to an individual student's performance in comparison to local, regional, and national norms.

Concerns regarding high stakes assessment practices are numerous (Janesick 2001; Helms 1992, 2002). Following are some of the problem areas that have been associated with these practices:

- construction of tests
- scoring and interpretation of tests
- penalties of the tests if test takers are below par
- issues of fairness
- teachers teaching to the test
- cultural equivalence

In addition, critics note that movement toward high stakes testing has led to a focus on scores obtained on standardized tests rather than on the process of assessment. This may be problematic for particular students given the limitations of the measures themselves as well as scoring patterns (i.e., higher failure rates) for students from marginalized and oppressed groups in the United States (e.g., African American and Hispanic). Some minority groups have historically been denied access to educational resources. A disproportionately high number of low-performing schools tend to be in minority communities with low socioeconomic status (Johnson and Johnson 2002; Jones, Jones, and Hargrove 2003). The impact of high stakes testing in these communities may be detrimental given that it may result in a primary focus on only the academic basics—reading, writing, arithmetic—and the absence of a diverse, enriched curriculum.

HISTORICAL CONTEXT OF HIGH STAKES TESTING

The quality of public education and student achievement has been the focus of politicians and educators for decades. In October 4, 1957, the former Soviet Union launched Sputnik, creating an impetus for the American public to scrutinize and demand higher standards with respect to the science and math curriculum in American schools. Over twenty years ago the report "A Nation at Risk: The Imperative for Educational Reform" (National Commission on Excellence in Education 1983) was published, again leading to a focus on what was viewed as substandard curricula and low achievement in American

schools. Events such as these led the public to demand changes in the educational system and greater accountability for student achievement. One outcome of this was the determination that test scores represented valid measures of achievement. As noted in the historical review by M. G. Jones, B. D. Jones, and T. Y. Hargrove (2003), by 1991 school reform efforts were identified within the purview and domain of state governance. By 2000, all states but Iowa had implemented statewide testing programs. Forty-one states included multiple-choice exams as part of the assessment process. In 2002, the No Child Left Behind Act further solidified testing as a mainstay of evaluation of quality in educational practice. This law requires that students in the third through eighth grade be tested in the areas of mathematics, reading or language arts, and science. In effect, it raises the stakes with respect to test outcomes for both the individual student and the schools or districts in which tests are administered.

IMPACT OF HIGH STAKES TESTING ON EDUCATION

Jones, Jones, and Hargrove (2003) note that high stakes tests have led to comparisons of teachers, schools, and school districts. A number of rewards are tied to the results of these tests including determination of teacher merit (i.e., salary bonuses), media recognition, continued employment for school administrators, and greater freedom of curriculum decisions.

High stakes testing has an impact on all levels of educational practice from the curriculum to the role of teachers in the classroom. Current educational theories note the importance of student-centered curriculum. This perspective supports activities such as cooperative learning, student discussion, and personal discovery in education, with the teacher viewed as a facilitator or guide. There has been some criticism of the student-centered approach, however, by some educators who feel it does not stress the basic academic skills that are so often emphasized in high stakes testing programs. Teacher-centered methods that focus on lecture and direct instruction appear to be more congruent with the high stakes testing movement. A balance between both methods appears to be the most effective form of instruction given that student-centered instruction promotes critical thinking skills and creative problem solving, while

teacher-centered practice is effective in communicating domain-specific knowledge. High stakes testing often emphasizes domain-specific knowledge to the exclusion of creative problem solving and higher order decisionmaking skills. It should be noted that these skills are difficult to assess with any standardized measure given current formats that depend upon one correct response.

Concerns have been raised with respect to educational instruction being primarily focused on the information covered by the tests, i.e., teachers teaching the test. In addition, anecdotal evidence suggests that the pressure on teachers, administrators, and students to obtain high scores on these measures has led to cheating and unethical behavior. For example, a school with large numbers of immigrant students (for whom English is a second language) may opt not to have these scores included in the overall summative report. Teachers may focus their energy on test preparation skills rather than their planned curriculum. It is well documented that test strategies can enhance performance on multiple-choice tests. Indeed a number of companies offer courses that guarantee test score gains. Unfortunately, these services are often available only to privileged groups within the educational system (e.g., some private schools offer test preparation programs as part of the curriculum). More egregious acts have been noted, such as school personnel changing responses to items. Computerized scoring programs have been designed to detect numbers of erasures on response forms to address this potential problem. Despite the added pressure of external demands many teachers report that their schools tend to engage in symbolic responses without any substantive change in teaching methods or other approaches that would foster student development (Firestone and Mayrowetz 2000).

The high stakes environment also has an impact on school climate and student motivation. For example, research indicates that high stakes tests may lower the intrinsic motivation of students to achieve in school. In addition, students may experience higher levels of stress and anxiety that also negatively impact motivation.

Finally, high stakes tests as currently implemented are often associated with lower retention and higher dropout rates for students who score low on these measures.

TYPES OF HIGH STAKES ASSESSMENTS

In the preceding discussion the focus has been on standardized multiple-choice formats for high stakes testing. This constitutes a major form of high stakes assessment. However, it should be noted that high stakes assessment might take any form including authentic assessment and informal testing practices. For example, portfolios may be used by teachers so they can review collections of student work and obtain information regarding academic gains (Jones, Jones, and Hargrove 2003). This is difficult to implement on a large scale given the time investment needed. Evaluations of portfolios in the high stakes context often require more than one rater, and reliability in scoring as well as the quality of interpretation is difficult to determine with great certainty. More complex forms of ability and skill are difficult to assess using the traditional multiple-choice standardized format.

Another type of high stakes testing is essays and writing rubrics (Jones, Jones, and Hargrove 2003). Students may be asked to write in response to an open-ended question or prompt. Two raters applying writing rubrics then grade these writing samples. These writing rubrics provide a standardized framework for scoring the essays.

Science experiments may be used as another alternative form of high stakes testing (Jones, Jones, and Hargrove 2003). In this format, students may be provided with information regarding the required study along with materials. They are asked to conduct the experiment and reflect upon the process as a learning experience. The teacher is then asked to respond to these reflections as well as provide additional information gleaned through observing the process of conducting the experiment. The teacher comments on these reflections and gives feedback prior to the written science examination. This examination is specifically focused on the process of the investigation completed by the students.

It is critical that attention be paid to alternative high stakes assessment methods regardless of the required resources (e.g., time, money). Research indicates that the impact of high stakes testing, whether positive or negative, is determined by the type of high stakes assessment employed, the pro-

professional training provided to the teacher, the subject area being assessed, and the overall level of achievement at the school (Jones, Jones, and Hargrove 2003).

As noted earlier, there are problems with the current measures being employed in the high stakes movement. No single test should be used to make serious decisions about a student's academic future. Students with learning difficulties are disadvantaged with respect to high stakes testing. In addition, members of marginalized racial/ethnic groups—often targeted as low achievers—are also vulnerable to negative consequences of these standardized measures. Proponents of the high stakes testing movement claim that these measures are uniformly applied and establish high standards for all students. Unfortunately, educational resources and opportunities are not uniformly available, leading to achievement gaps between marginalized groups. One potentially negative consequence of testing disparities is that vulnerable populations are then subject to curriculum practices that are geared toward success on the test (e.g., drill and memorization) rather than quality education standards focusing on higher order thinking skills.

IMPROVING THE PROCESS OF HIGH STAKES TESTING

High stakes testing was initially introduced as a means of reforming what some saw as a deficiency in educational standards. However, today a number of its proponents are advocating new reforms in the high stakes testing movement itself. Based upon their review of the available literature on high stakes testing, Jones, Jones, and Hargrove (2003) conclude that the following reforms should be considered: (1) the focus should be on improved student learning and overall student achievement rather than test scores; (2) assessment results should not be used for comparison of schools or districts given that this practice does not help students; (3) continued examination of the cost (i.e., time and money) testing takes away from teaching; (4) one test should not be used in isolation for educational decisions; (5) better tests should be developed in multiple formats to reflect higher order thinking skills and problem solving; (6) necessary accommodations should be made for students with special

needs; and (7) alternatives need to be considered for student retention.

It is clear that high stakes testing has had a major impact on the educational system on a variety of levels. While proponents of this testing movement have clear reasons for their support of the use of these measures, there are negatives as well that must be considered in making decisions about the future educational opportunities of students within the diverse contexts of the public education system.

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NORM-REFERENCED TESTING

Norm-referenced tests (NRTs) refer to measures whose main purpose is to provide information regarding an individual examinee's performance relative to a norm group (or norm sample). This is in contrast to criterion-referenced tests that focus on the knowledge or skills that need to be mastered. Ronald J. Cohen and Mark E. Swerdlik note in their discussion of NRT that the norm group refers to the population sample of test takers upon which the test is based (1999). For most well normed tests, this sample reflects the demographics of the population for which the test is designed. This process is called standardization. In selecting this sample, important demographic characteristics may include gender, socioeconomic status, age, race/ethnicity, region of the country, and urban/rural status. It is critical that tests developers provide information regarding the features of the norming sample so that examiners can determine whether the test is appropriate for use with their particular student or client. In general, the more closely matched the examinee is to the norming population in terms of demographic characteristics the more appropriate the test is for use. In addition, larger norming samples are seen as beneficial since it is more likely that the test will be applicable to a wider audience depending upon the breadth of the overall norming population. Information regarding the norming sample is often provided in the technical chapters or sections of the test manual along with reliability and validity information.

EXAMPLES OF POPULAR NORM-REFERENCED TESTS

The Graduate Record Exam (GRE) is one of the major norm-referenced tests in current use today (Educational Testing Service [ETS] 1994). Many graduate level institutions require the GRE as part of the admissions process. The GRE is comprised of three parts: Verbal, Quantitative, and Analytical Writing. The Verbal section assesses reading comprehension, as well as verbal and analogical reasoning skills. The Quantitative section assesses basic concepts of arithmetic, algebra, geometry, data analysis, quantitative reasoning, and problem solving. Both the Verbal and Quantitative sections are administered in a multiple-choice format using computer adaptive scoring. Adaptive testing requires that the items administered to particular examinees be based upon the individual's performance on past items. The ETS website (ETS n.d.) indicates that three factors influence the items administered: (1) the statistical characteristics of each question answered (e.g., item difficulty level), (2) the required variety of question types (all types must be administered to a sufficient degree), and (3) the appropriate coverage of content. The Analytical Writing section is a performance test in two parts, the first requiring students to present a perspective on an issue, and the second requiring analysis of an argument. The focus of this discussion will be on the Verbal and Quantitative sections. Given the importance of the GREs in determining admission into graduate school, and the difficulties of establishing a nationally representative norming sample, the publishers note that caution should be used in interpreting GRE scores of students who "may have had an educational or cultural experience somewhat different from that of the traditional majority" (Educational Testing Service 1994, 14).

Another popular norm-referenced test is the Scholastic Aptitude Test (SAT) (College Board n.d.). The new SAT, designed to be used in 2005, will be comprised of the following: (1) a writing section (multiple choice questions on grammar and usage and a written essay), (2) a critical reading section (short reading passages added to existing long reading passages), and (3) a math section (expanded to include topics from third year college preparatory math). The analogy items and quantitative compari-

sons sections have been eliminated. Items are continually being developed by experts in the field for inclusion on the SAT. These items are pretested as part of the regular SAT examination process. This procedure enables test developers to try out items with large numbers of potential college students. Responses to these pretest items are analyzed to determine difficulty level and appropriateness for inclusion.

STATISTICAL FORMULATIONS OF NORM-REFERENCED TESTING

According to Anne Anastasi and Susana Urbina (1997), there are a number of statistical formulations that pertain to understanding the function of norms in standardized assessment. These include: (1) the normal curve, (2) measures of central tendency, (3) measures of variability, (4) developmental norms (e.g., mental age, grade equivalents, ordinal scales), and (5) within-group norms (e.g., percentiles, standard scores).

The normal curve is a mathematically derived distribution of scores resembling a bell shape. The curve indicates that the highest frequency of scores center in the middle of the range of scores and taper off at the upper and lower extremes of the score distribution. Most psychological and educational constructs that are assessed using standardized tests (e.g., personality characteristics, aptitudes) have distributions that approximate the normal curve (Anastasi and Urbina 1997). The characteristics of the normal curve form are critical to the formulation of different statistical analyses. A normal curve yields a mean score that is also at the fiftieth percentile.

Measures of central tendency reflect a score that may be viewed as representative of the overall performance of a group. These include the mean (i.e., the average of all of the scores added together and then divided by the number of examinees), the mode (the most frequently occurring score), and the median (the score reflecting the midpoint of the scores). In a frequency distribution that approximates the normal curve, the mean, median and mode will all be the same.

Measures of variability reflect the distribution (i.e., individual differences) of scores around the mean or other measure of central tendency. The measures of variability include the range, standard deviation, and

mean square deviation. The range is represented by the lowest to the highest score in the group. This measure of variability is the simplest since it relies upon only two scores in the distribution. However, the range is the least useful indicator of variability since noting the highest and lowest score reveals very limited information regarding the distribution of scores. The more frequently used statistical concept representing variability is the standard deviation. There is a clear relationship between the standard deviation and the proportion of cases when the distribution of scores approximates the normal curve. The normal curve distribution designates a particular percentage of scores that will be found based upon standard deviation units. Given that the normal curve is symmetrical, the same percentage of cases will fall on each side of the mean of the distribution, that is, 34.13 percent will fall one standard deviation above and 34.13 percent will fall one standard deviation below the mean; 99.72 percent of the cases will fall within 3 standard deviations above and below the mean.

Developmental norms provide descriptive information with respect to how an individual examinee's score reflects performance relative to a continuum of skills or abilities. For example, age-equivalent scores or age norms refer to the average performance of a sample of test takers at various ages. Age equivalents are most appropriate for subject areas taught throughout a number of grade levels.

An example of an age-equivalent indicator is mental age. Mental age is often used with respect to interpretations of intelligence test scores. In this case an examinee of a particular chronological age may score similarly to the average child at another age. Thus the examinee could have a mental age similar to the age at which he or she scored. Criticisms of this concept are that a child with a mental age much higher than the child's chronological age does not necessarily demonstrate the higher mental age with respect to all areas (i.e., socially or psychologically). Thus, the concept of mental age may be too broad to reflect the attributes of the individual. It should be noted that mental age does not increase at the same rate over the lifespan. Rather, the mental-age construct tapers off in advancing years given that the learning curve is usually steeper at younger age levels and then plateaus in the adult years.

Another example of developmental norms is grade

equivalents (or grade norms). Grade norms are established based upon the performance of students at a particular grade level (i.e., the average number of correct responses on a test for a particular grade). In order to calculate grade equivalents, the mean or median score for children at a selected grade level is computed. Given that the school year is comprised of ten months, fractions are expressed as decimals. Thus, a grade equivalent score represents the individual's performance based on the grade level in the norm sample at which the average score is the same as the examinee's score (Mather, Wendling, and Woodcock 2001). A number of limitations are associated with grade equivalents as noted by Cohen and Swerdlik (1999). For example, grade norms do not reflect the content of the type of items the examinee answered correctly or incorrectly.

Developmental norms are also available with respect to behavior development in the form of ordinal scales. These scales are based upon knowledge of developmental patterns and sequences of behavior. Ordinal scales yield information about an examinee's stage of development with respect to particular behavior functions, as well as descriptive data regarding the performance of particular tasks.

National norms refer to standardization samples that are representative of the overall country in which the test is developed. This sample is comprised of proportional representation on a number of population characteristics. These include geographic region of the country, race, ethnicity, age, socioeconomic status, and urban/rural/suburban locale. Regional or local norms are also useful in providing important reference points to evaluate an individual examinee's performance.

WITHIN GROUP NORMS

Norm-referenced tests provide information regarding how an examinee scores in relation to a particular reference group (e.g., same-age-group peers, classmates in a given school). These within-group norms provide valuable information with respect to interpretation of an examinee's test scores.

Standard Scores

A standard score is a converted raw score (i.e., number of items scored correct). A standard score is more

easily interpretable given that a standard score reflects the examinee's performance relative to others. The mean and standard deviation of raw scores is arbitrary and dependent upon the scaling and number of items on a particular measure. Standard scores have a known mean and standard deviation. For example, z scores have a mean of 0 and a standard deviation of 1. Statistically the z score is the difference between the raw score and the mean of the particular measure divided by the standard deviation. Other forms of standard scores include T scores (mean 50, standard deviation 10), and stanines (mean of 5, standard deviation of 2). Another common scale used on achievement tests places the mean standard score at 100 and the standard deviation at 15.

Percentile Scores

Percentiles reflect the percentage of test takers whose scores fall below a particular score (e.g., number of correct responses). Thus, the percentile represents an individual's position in the standardization sample. Percentiles may best be understood in relation to an obtained ranking with the top score being 100. The lower the percentile the lower the score.

While percentiles are reflective of an individual's ranking or position, they do not provide information regarding the differences between scores. Given the distribution of scores based upon the normal curve the distance between scores will be more spread out the closer one is to the mean of the distribution. Thus, the differences between raw scores will be minimized near the ends of the distribution and exaggerated in the middle of the distribution. For example, on the Woodcock-Johnson Achievement Battery, Third Edition, there is a 25-point difference in percentiles between a standard score of 100 (fiftieth percentile) and a standard score of 90 (twenty-fifth percentile). However, there is only a 7-point difference between a standard score of 80 (ninth percentile) and a standard score of 70 (second percentile).

It is not uncommon for individuals to confuse two different concepts, percentile and percentages. Percentiles differ from percentages in that the percentile is a person's ranking based on a norm group that ranges from 1 to 100, while percentage refers to the total number of items an individual answers correctly divided by the total possible and multiplied by 100.

ISSUES IMPACTING NORM-REFERENCED TESTING

A common finding with respect to norm-referenced tests is the rise in scores over time known as the saw-tooth effect (Linn 2000 cited in Jones, Jones, and Hargrove 2003). Observations of overall test scores indicate that when a new test is administered the scores are often found to be relatively low and then steadily rise over time. While some may interpret this as students doing better, most scholars attribute the rise to more focused instruction on particular skills and teaching to the test. Thus, there is a need to continually update and renorm measures that are used frequently. The content of tests may become outdated and less applicable given the quick pace of educational advancements in knowledge. As noted earlier with respect to the GRE and SAT, items are being generated continually and pre-tested to determine characteristics for inclusion on the measures.

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TEACHER ASSESSMENT

In the era of accountability in education, teacher assessment has become a major part of the licensing and credentialing process. Maintaining standards for teachers is not new, and evidence of evaluating teaching performance has been noted for over a century. Concerns regarding appropriate evaluation practices have arisen given the complexities of teaching. Issues arise with respect to who conducts the teacher evaluation and what constitutes an accurate sample of teaching performance. In addition, there is evidence to suggest that the stages of teacher development (novice to expert) will impact the type of assessment needed. For example, in the classroom, novice teachers generally use what they have been formally taught, that is, objective facts and strategies in what may be deemed a rigid format. The performance of expert teachers often appears more fluid and involves spontaneous, complex decisionmaking and problem solving within the dynamic and educational context of the particular classroom.

David C. Berliner (1989) notes that there are dif-

ferences between novice, advanced beginner, or expert teachers in the following areas: interpreting classroom information, using classroom routines, and displaying emotionality. Novice teachers have greater difficulty in determining what needs to be attended to in the classroom. For example, a novice teacher may interrupt the lesson in order to address students who are not following directions, whereas a master teacher may rely on subtle cues to reengage students. In addition, novice teachers tend not to predict, hypothesize, or make assumptions about what is occurring in the classroom, and they use different classroom frameworks in comparison to more advanced teachers.

TYPES OF TEACHER ASSESSMENT

There are generally six types of assessment used to evaluate teachers. These include: (1) written examinations, (2) assessment center exercises, (3) classroom observations, (4) portfolio assessments, (5) student evaluations, and (6) combined assessment practices (Shulman 1989).

Written Examinations

Written examinations used in teacher evaluations are comprised of measures developed to test for particular areas of competence. These tests often address basic skill areas (e.g., reading, writing, mathematics); knowledge of content with respect to a particular subject area; and understanding and applying teaching pedagogy to professional practice. These areas have been identified as part of the Praxis/National Teacher Exam (NTE) (ETS n.d.). The three stages of the exam include: Stage I (enabling skills)—reading, writing, mathematics; Stage II—measures of subject matter knowledge; and Stage III—measures designed to evaluate understanding and judgment with respect to the practice of teaching.

There are several strengths of written examinations. First, they sample broad domains of information. Second, they are economical to the extent that they are group administered and scoring is often reliable (e.g., multiple choice). In addition, the most popular teaching measures have computer-based scoring, thereby increasing the efficiency of obtaining results.

Written examinations may also include evaluative

essays requiring the application of theory, decision-making, and professional judgment. However, these essay formats have been criticized by some due to the potential for discrepancies in scoring by different judges rating the same text.

Concerns regarding the written examination extend beyond the inclusion of essays. For example, these tests are often designed to have one “right” or “correct” answer. However, teaching is a complex and contextually driven practice, and what may be deemed correct in one situation may not in another given the unique characteristics of each classroom and student group. Another concern is that in addition to evaluating decontextualized information, written examinations measure only pieces of knowledge related to teaching skills. They often do not address more challenging and sophisticated skills involving professional judgment, decisionmaking, and problem solving.

Assessment Center Exercises

Assessment center exercises include simulations of classroom situations. For example, teachers may be asked to develop a lesson plan and demonstrate their teaching skills to a new group of students. A strength of this method is that it provides a closer approximation to a real life classroom experience than paper-and-pencil tests. The limitations of assessment center exercises are that they involve greater expense to set up and evaluate teacher performance. In addition, they do not sample teaching situations broadly nor address multiple domains of content. Finally, as noted by Lee S. Shulman (1989) the assessment center does not address the shared histories between teacher and student within the learning environment.

Classroom Observations

Classroom observations constitute the most often-used mode of teacher assessment (Ellermeyer, 1992). Given the limitations noted with respect to the other methods of teacher assessment, observations are the most contextualized evaluation method. Often observations are conducted by the principal, master teacher, or curriculum supervisor and involve usage of generic rating scales examining particular teaching skills. Concerns are often raised given that observations involve only a sampling of a particular

teacher's repertoire of skills. Thus, questions can be raised regarding how many classroom visits are needed to determine a teacher's normative or typical performance. In addition, the credentials of the observer may also be called into question. Does the evaluator have adequate content knowledge to evaluate practice within that teaching domain?

Modifications of the direct observation approach may also be incorporated. For example, teachers may be videotaped conducting lessons with students. These videotapes may be reviewed with evaluators to determine teaching effectiveness. Note that these videotapes may be used as part of portfolio assessment in which the teacher selects the film that best demonstrates his/her skills as a teacher.

An understanding of the goals of the assessment process is also imperative. Is the evaluation to be used in a formative manner to provide feedback to the teacher for purposes of skill improvement? Or is the purpose of the evaluation summative, for instance, to assign a particular grade or make judgments regarding overall competence? Or is it a combination of both (i.e., the teacher receives feedback but growth must occur in the future)? The personal biases of the evaluator may enter into the process given that people may have different criteria as to what constitutes good teaching.

Portfolio Assessment

Portfolio assessment is a popular method of assessing teacher effectiveness because it focuses on actual work samples. The portfolio is a creative process through which teachers may collect samples of their work for self-evaluation as well as for examination by others invested in the educational process (e.g., supervisors, administrators, mentors). Portfolios may contain documents related to projects currently in process, completed works, and those related to evaluation from various constituents (e.g., supervisors, students). Portfolios in teacher assessment focus on the "authentic" work of the instructor as related to real experiences in the classroom. Valerie Janesick (2001) describes her personal teaching portfolio as containing: (1) a statement of beliefs about teaching, (2) a sample course syllabus, (3) a self assessment about teaching a particular course, (4) sample student evaluations, and (5) letters from students. An important aspect of portfolio assessment is that the teacher selects what the portfolio will contain.

Janesick notes that she writes a self-assessment for every course that she teaches and revises her syllabus each time she teaches a course.

Student Evaluations

In higher education, student evaluations are often used as a form of teacher assessment. Student evaluations may be used either on their own or in conjunction with other evaluations, such as portfolio assessments. A review of over sixty studies examining elementary public school students' ratings of teacher effectiveness (Follman 1995) indicated that pupil rating scales are the most common form of student evaluation. More rarely used are formal and informal interviews with students, which have been criticized due to concerns regarding reliability, validity, and objectivity. Attention needs to be paid to students' leniency, the halo effect (i.e., observer biases or preconceived perceptions will impact a teacher's evaluative judgment), and the age at which students can responsibly rate their teachers (e.g., students below grade three may not be able to accurately assess their teachers).

In addition to pupil rating scales, qualitative open-ended questions may also be utilized. Janesick (2001) notes examples of questions that may be used in teacher evaluation by students: (1) Describe what you learned and accomplished in this course and how it relates, if at all, to your program and future professional life (2) To what extent did the instructor facilitate your work in this course? (3) What qualities in the instructor facilitated your development in this course? and (4) Would you recommend this course, under what conditions, and to whom?

Combined Assessment Methods

Combining various methods of teacher assessment may be the most effective means of obtaining a comprehensive evaluation. Currently, most states require a written examination for beginning teachers and periodic observations and portfolio assessments. Shulman (1989) notes that each method of teacher assessment is limited in some way. The best solution is to include different methods of assessment. Shulman supports an assessment process over time that combines at least two of the following: (1) written examinations of knowledge and reasoning (e.g., multiple

choice and open-ended items); (2) performance assessments (e.g., simulation exercises, computer-based problems, and structured interviews); (3) observations of teaching by master teachers, administrators, or supervisors using a direct method or videotape; (4) reflective portfolios that include samples or exhibitions of student work with explanations; (5) teachers' curriculum plans; (6) student evaluations; (7) videotapes of classes; (8) other artifacts produced in the classroom; and (9) combinations of these methods.

FUTURE OF TEACHER ASSESSMENT

Given the current focus on accountability in education, it is likely that teacher assessment will continue as a major focus in examining the quality of education. Growth of professional licensure and accrediting processes ensure that attention will be paid to these important considerations in educational assessment. P. Michael Timpane (1989) poses the following questions in determining the effectiveness of teacher assessment procedures: (1) Is the system of evaluation integrated with contemporary teaching practices? (2) Is the assessment process put to appropriate use within the context of the unique school environment? (3) Is the overall conception of teaching based upon an active dynamic process or on mastery of particular rules and knowledge? (4) At what level are teachers involved in the assessment process (e.g., design, administration, interpretation)? and (5) How does the process of evaluation lead to accurate feedback to teachers and improvement of professional practice? Timpane also notes "every profession in our society must define, develop, and operate a professional assessment system and satisfy the public about it. We have not yet done so in any systematic sense in education" (p. 119). Though these words were written nearly fifteen years ago, they continue to reflect the current state of teacher assessment.

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TEST DEVELOPMENT

Developing assessment measures requires a great deal of time and perseverance. The most popular tests have

often taken years to establish and have required the expenditure of a great deal of human resources and financial capital. Entire publishing companies are currently devoted to the test development industry.

Bruce Walsh and Nancy Betz (1995), as well as Ronald J. Cohen and Mark E. Swerdlik (1999), identify five steps involved in the test development process: (1) defining the construct or area to be addressed by the measure (test conceptualization); (2) creating a large selection of items comprehensively addressing the domain of interest (test construction); (3) administration of the preliminary test to a test development sample (test tryout); (4) refinement of the item pool (item analysis and test revision); and (5) administration of the revised test and determination of reliability and validity.

DEFINING THE CONSTRUCT

Defining the construct to be examined in the new measure is the most critical step in the test development process. The developer must carefully identify all aspects of the domain of interest and operationalize (i.e., specify in behavioral and task-oriented language) what the construct encompasses and what it does not. Cohen and Swerdlik (1999) identified multiple questions to guide this process, including: (1) What are the goals of the test? (2) How is this test unique when compared with measures currently in existence assessing similar areas? (3) What domain or area will this test cover? (4) What material should be reflected in the items? (5) In what format will the items be presented? and (6) Who will be the consumers of this measure? Who will purchase it and who will take it?

As noted in the guiding questions, at this stage of the development process the creator must determine the format of the items—multiple choice, rating scale, Likert scale (five alternative responses), paired comparisons, cloze method (e.g., fill-in-the-blank), true/false, short answer, essay, and so on. Item format will in part be determined by the construct being addressed. For example, achievement tests generally follow a multiple choice, fill-in-the-blank, or true/false format given that the test is examining the individual's ability to obtain a "correct" response. Measures developed to address attitudinal dispositions may rely upon a Likert scale format that requires the respondent to indicate a degree of agreement with a particu-

lar statement (i.e., strongly agree–strongly disagree). Tests incorporating observational rating procedures or open-ended responding may also be considered. Other formats may include constructed-response tests (Green 1992), such as items requiring the examinee to structure a response in writing. This format is often used with teacher-made tests. Other examples of constructed-response formats include essay and short answer items.

The development of performance tests includes considerations of item generation focusing upon particular situational tasks. Measures in this area may include those addressing problem solving in a particular context as well as application of knowledge.

Given that educational and psychological constructs are often complex and multifaceted, examination of the literature and initial identification of test dimensions are key in stimulating ideas and providing relevant information. In cases where the test developer is creating a measure in a new area, consultation with experts working in related theoretical areas or practitioners (e.g., clinicians, teachers) who would be potential consumers of the test would be important. If there already exist measures in the area these should be examined for potential ideas and areas to address.

CREATING TEST ITEMS

In this step, items are generated that focus on the various aspects of the construct defined in the previous step. The number of items generated should exceed the number desired for the length of the final measure. For example, Cohen and Swerdlik (1999) note that for multiple-choice tests, the first draft of a standardized measure should include twice the number of items as that estimated for the final version. Other authors, like Donald Ross Green (1992), indicate that the number may need to be even higher given that anywhere from 25 percent–75 percent of the items may be rejected. Test developers may refer to related tests already in existence for assistance in creating items. Items may be adapted or modified to address components of the new test.

Green (1992) also discusses the benefits of establishing an item bank. This involves saving test items along with data regarding item characteristics. Item banks can facilitate test construction especially when multiple forms of tests are often needed. In addi-

tion, items can be written continuously and experimental items added to current test forms to obtain item data. For example, item banks may be available to teachers to assist in generating tests for particular subject areas. These item banks are often linked to particular textbooks.

One concern at this stage of development is whether or not the items appear to assess the area of interest defined by the test developer. This is known as face validity. Face validity, while not based upon a statistical examination of the data, is important in terms of how consumers view a particular measure (consumer confidence) and may impact how motivated an examinee is to perform on the test. For example, if the items are viewed as not relating to the overall goals of the test, the examinee may not be motivated to work (Cohen and Swerdlik 1999).

An important aspect of item generation is that it differs depending upon whether the test is designed to be norm referenced or criterion referenced. On a norm-referenced test it is expected that a “good” item is one in which high scorers get the item correct while low scorers do not. The same could be said for criterion-referenced tests; however, the overall goal is to determine whether individuals meet the criterion (e.g., have mastered a particular area). For more information the reader is referred to the criterion-referenced and norm-referenced test entries in this chapter.

ADMINISTRATION OF TEST TO DEVELOPMENT SAMPLE

At this stage of the development process the preliminary test draft is administered to a large pool of participants reflecting the attributes of the population to be addressed by the final instrument. Age, educational level, geographic region, gender, socioeconomic status, and race/ethnicity may be characteristics attended to with respect to the development sample.

This preliminary measure should be administered under conditions identical to those that will be used with the final version of the test. Attention should be given to how examiners are trained to administer the measure (e.g., instructions to examinees should be specified verbatim so that all participants receive the same information at the start of the test) and appropriate environmental conditions (e.g., lighting, temperature). Item responses from the development sample will be used to perform item analyses in the following step.

REFINEMENT OF THE ITEM POOL

Refinement of the item pool is accomplished primarily through item analysis. Item analysis involves statistically examining the properties of the test items. This process may take different forms depending upon the type of test. For example, items on achievement or aptitude tests would involve determining item difficulty levels. In these cases the test developer would select items that address a range of ability levels related to the group for which the test has been constructed. The test should reflect a wide range of scores approximating a normal curve distribution (see entry on norm-referenced testing in this chapter). For example, if the items on a test are too easy and all of the examinees obtain high scores, then it will be difficult to determine ability level since there is no range of comparison. In such a situation, there is no information provided with respect to how individuals differ on the particular trait or characteristic being addressed by the test. In the case of an easy test, there would not be discrimination of abilities since everyone obtained high scores. The opposite would be true if the test were constructed at too high a level (too difficult) for the population of interest, that is, if everyone obtained low scores there would be little differentiation of ability at the lower end. Item difficulty indexes are calculated based upon the number of test takers who responded to the item correctly. Thus, the item difficulty index ranges from 0 to 1. An item difficulty index of 0 would mean that none of the examinees responded correctly to the item. An item difficulty index of 1 would mean that everyone taking the test got it correct. The higher the item difficulty index the easier the item. The optimal item difficulty index is .5 with a range of approximately .3 to .8 (Cohen and Swerdlik 1999).

It should be noted that in the case of criterion-referenced testing the finding that all examinees pass at a particular level of performance would not be problematic since the criterion is based upon standards that every student should meet. The test developer may have to recycle through earlier steps (e.g., item generation) if the item analysis results in too many items being eliminated. An alternative to the item difficulty index is the item endorsement index, which would be applied more in personality

assessment where responses are not characterized as being right or wrong. Instead, the level of agreement or endorsement would be the important indicator (e.g., attitude scale).

Other procedures underlying item analysis include factor analysis and the item discrimination index. Factor analysis refers to a statistical procedure that determines whether the test items are measuring the same thing. Items that do not perform in accordance with an overall factor or factors (in the case of multidimensional tests) may be rewritten or eliminated. The item discrimination index provides information as to whether an item differentiates high scorers from low scorers on the overall test. It is often viewed as problematic when individuals who score low on a test answer a particular item correctly more often than those who score high on the overall measure. When the item discrimination index is high, this indicates that high scorers were more likely to provide a correct response to the item. Where the index is low and low scorers were more likely to answer correctly, then the item needs to be either revised or eliminated. Item analysis of multiple-choice tests may involve calculating the rate of endorsement of the correct response in comparison to the other choices or distractors. This may allow test developers to gain insights into the errors of reasoning made in selecting from among the alternative responses. Item characteristic curves based upon item difficulty and discrimination may also be derived. These curves can provide information regarding item discrimination (i.e., ability versus probability of a correct response) and help in the item selection process.

Cohen and Swerdlik (1999) also note that items can be qualitatively analyzed through interviews with examinees. The questions may be focused on issues of cultural sensitivity, face validity, behavior of the test administrator, test environment, test language, examinee's mental and physical state (before testing, during testing, after testing), and overall impressions. In addition, expert panels of reviewers may be asked to review items to determine if they are appropriate. This may be particularly useful in obtaining some information about the cultural appropriateness of the items. Experts may be asked to look for evidence of stereotyping, familiarity of information pertaining to one group, and culturally or otherwise offensive language.

DETERMINATION OF RELIABILITY AND VALIDITY

The completed test is then administered to groups of examinees to determine the reliability and validity of the test and to compute normative data. The groups involved in this process are selected with attention paid to race, ethnicity, gender, age, geographic region of the country, rural or urban residency, and so on. As noted earlier with the development sample, these groups should reflect the variety of characteristics that would be present with individuals taking the finished test.

Types of Reliability

Reliability is defined as the level of stability or internal consistency of a measure over time (Borg and Gall 1983). It may be established using multiple methods (see test theory entry)—equivalent form, test-retest, item-total correlations, odd-even split half, internal consistency, and factor analysis. Reliability can be viewed as assessing how close the measure's obtained score is to a person's "true score." There are a number of factors that can affect a person's performance on a test. These include: clarity of items, length of the test, standardization of test instructions and scoring criteria, examiner factors (e.g., the degree of training needed to assess an individual), and examinee variables (e.g., motivation of the examinee, fatigue factors).

There are several methods used to determine a test's reliability. In the test-retest approach, a sample is tested once and then retested after a certain period of time. The two sets of scores are compared to determine how close they are to each other. An issue with this approach is the amount of time between each test administration.

A second method is to develop an equivalent alternate form. An examinee's score on one form is then compared to his or her performance on the alternate form. The closer the two scores are to each other, the more reliable the test. Issues with this approach include the expense and time spent developing and standardizing a second form of the test.

A third technique is the split-half reliability method. In this approach, the test is given one time and items on the test are split into two sets, often odd and even. Each set is then compared with the other to determine how consistent the test is internally.

In cases where the measure is evaluated by the examiner's subjective judgment (e.g., tests using open ended questions), reliability is assessed through inter-rater reliability, where two or more people score a measure and the more consistent their score, the more reliable the test score is.

All of these methods make use of some form of correlation whether it is with the same test over time, an alternate form of the test or the split half technique. The statistics used in many of these methods yields a correlation coefficient known as a reliability coefficient. Reliability coefficients or estimates can range from 0.0 to 1.0. The closer the coefficient is to 1.0, the more reliable the measure. The closer it is to 0.0, the less reliable the test. Although measures of potential, more subjective and less stable variables (e.g., attitudes) may be lower, educational achievement measures with a reliability of .90 (medium) or higher is considered an appropriate level of reliability.

Types of Validity

In order for a test to have validity, it must first be reliable. A test that does not consistently measure the variable being assessed will not be a valid test of that construct or ability. Reliability is a necessary but not sufficient condition for validity to exist. For example, a scale may consistently provide a score based on a number of math questions. However, if those questions measure only addition and multiplication is supposed to be assessed, the test will be reliable without being valid.

There are a number of methods used to validate a test as noted by Cohen and Swerdlik (1999). The choice of methodology used when validating a test is based on the purpose of the exam and the type of information the validity study is meant to provide. These approaches include face validity (discussed earlier), content validity, criterion validity, and construct validity.

Content validity refers to how well a test samples the domain of interest that the measure was designed to assess. For example, depending upon the goals of an achievement test, the measure must reflect accurately the curriculum upon which the test is based. An estimate of this may be obtained by employing panels of experts to review the test content.

One of the most common types of validity assessed

by test publishers is criterion validity. This type of validity focuses on how adequately a test score can be used to speculate about an examinee's standing on a particular variable of interest. The measure of this variable (i.e., the criterion standard against which the test score is compared) is termed the criterion variable. A criterion may be a specific behavior, test score, or diagnosis. The best criteria are those that are relevant to the measure of interest, reliable and valid. Criterion validity is comprised of two major types: predictive and concurrent validity. Predictive validity is an indicator of the degree to which a test score predicts some criterion measure. Specifically, predictive validity assesses the relationship of the test administered at one point in time and a criterion measure obtained at a future time (after a particular intervening event, e.g., treatment). How well the test predicts the criterion (e.g., improvement) attests to its predictive validity. Concurrent validity is an indicator of how a test score is related to some criterion measure obtained at the same time as the test was first administered.

Construct validity refers to the appropriateness of suppositions derived from the test scores regarding how an individual scores on the construct. A construct is defined as a scientifically based idea developed to describe or explain a particular behavior. Thus, in order to establish construct validity the test developer must formulate hypotheses regarding the meaning of high or low test scores in relation to the examinees behavior. There are two forms of construct validity: convergent and divergent validity. Convergent validity refers to correlations of tests scores between the measure of interest and other measures of other related constructs. Divergent (i.e., discriminant) validity refers to correlations between test scores and other measures assessing areas not relevant to the current test being evaluated. In the case of convergent and divergent validity, determinations of what is relevant versus not relevant may be theoretically derived.

At this stage of test development it is critical to examine the scores in terms of potential test bias, which has been a focus of concern for all educational measures. For example, any systematic variation in test scores, for example based upon race or ethnicity, would be detrimental to populations of students and may render the test unfit for use due to its unfairness in assessing members of particular groups.

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TEST THEORY

Test theory refers to the application of theoretical and statistical formulations in the understanding of test measures and results. Citations in the literature regarding test theory began nearly one hundred years ago. Test theory evolved in large part due to demands for the application of statistical concepts to assist in selection and placement decisions in educational settings. This entry highlights historical and contemporary contributions of multiple researchers and their influence on test theory.

CLASSICAL TEST THEORY

According to the recent review of the historical bases of testing by Hoi Suen and Joseph French (2003), the development of classical test theory (CTT) was directed in large part by the work of Charles Spearman in 1904. Spearman posited that any score obtained on a test consisted of the sum of a true score and a random error score. The smaller the random error the closer the test score would approximate the true ability or characteristic being measured. While seemingly simplistic in its application, this conceptualization of the true score model has had major implications in both understanding the meaning and interpretation of test scores, and the development of statistical procedures applied in test construction.

The true score model posits that when tests are administered to groups of individuals, differences in scores are attributable to true score variance and error variance. The proportion of score variance ascribed to true score differences is known as the reliability coefficient. The reliability coefficient is an estimate of the precision of the test score and is derived statistically by examining the relationship between the proportion of variance in observed scores attributed to true score variance and random error variance.

It should be noted that the derivation of the reliability coefficient also was influenced by earlier work on regression and the foundations of the Pearson's r correlation. Pearson's r represents statistically the relationship between two variables. According to CTT, the observed scores of two equivalent tests can be compared if administered to the same group of individuals. The result is Pearson's r , which is the

mathematical equivalent of a reliability coefficient. Reliability is determined in two ways: administration in a test-retest format or administration of equivalent test forms (see later discussion for other forms of reliability based on internal consistency). Test-retest reliability refers to situations where the same test is administered on two occasions. Scores obtained at the first testing session are then compared to results from the second administration. The time interval between the initial testing and the repeated administration is dependent in part on the construct being assessed and the particular measure being examined. Constructs that are viewed as more stable and less vulnerable to normal life changes may be subject to longer time intervals between test administrations to limit the impact of the previous exposure to the test content. Statistical estimates derived through the test-retest method are referred to as coefficients of stability. The second way in which reliability coefficients may be derived is through the administration of equivalent tests. Thus, in the process of test development more than one version of the test may be created. These equivalent forms are then administered and the scores obtained on each are then compared statistically in the form of a correlation. This is known as the coefficient of equivalence.

As CTT evolved it was determined that longer tests (i.e., more items) yielded higher reliability coefficients. The more items on a test measuring a particular construct, the less random error was detected. The mathematical explanation for this finding became known as the Spearman-Brown prophecy formula. The development of this formula contributed to the development of internal consistency methods in estimating reliability. Internal consistency methods provided valuable alternatives to the test-retest and equivalent forms reliability indicators. One of these internal consistency models is split-half reliability. This form of reliability is based upon the correlation of two sets of scores obtained from a single test administration. First the test is divided into two equivalent halves, and then a Pearson's r is calculated. The obtained r is then adjusted using the Spearman-Brown formula (Cohen and Swerdlik 1999). There are a number of ways to split a measure. Often simply cutting the test in half is not justifiable given that earlier items may be easier than later items. One way to

split the test is to randomly assign half of the items to one section and the rest to another. Another way is to divide the test into odd and even test items. A third way is to base the split on the content of the measure. Thus, each derived scale will be equal in terms of content and difficulty.

The focus of CTT has been on standardized paper-and-pencil measures. The theory does not apply well to multifaceted testing conditions that may involve multiple raters, behavioral observations, or diverse testing designs (Suen and French 2003). Suen and French go on to note the historical contributions of Cronbach and others who developed generalizability theory (GT) as a less restrictive outgrowth of CTT based on analysis of variance. Generalizability theory is applicable to any set of measurement conditions. Thus, it can be used to estimate errors and reliability coefficients for performance assessment, portfolio assessment, and other judgment based assessment methods. One such method is the derivation of the Kuder-Richardson Formula 20 (KR-20). Cohen and Swerdlik (1999) note that the KR-20 is the statistic of choice when determining the inter-item consistency of dichotomous items (e.g., multiple choice). Another statistic is the coefficient alpha (Cronbach's alpha), which may be used on dichotomous items or nondichotomous items (e.g., attitude scales).

Suen and French note that both CTT and GT focus on the "true score" formula (i.e., observed score equals true score plus error). Neither theoretical perspective attempts to assess the true score directly as some degree of error is always assumed to be present.

ITEM RESPONSE THEORY

Robert J. Mislevy (1993) notes that both Item Response Theory (IRT) and CTT/GT are concerned with the overall test performance of examinees. However, as noted earlier, CTT and GT do not address issues related to the origin or reasons for the obtained score. IRT on the other hand, supports the formulation of mathematical models that reflect relationships between observable variables and hypothesized traits (Suen and French 2003). For example, when applied to achievement tests, test items are often administered to individuals and the computer records the responses. The computer then generates

mathematical models representing the probability that a given examinee will correctly answer another item that has not yet been administered. Thus, IRT provides insight into the relationship between the responses to test items and estimates of ability and achievement. One can hypothesize about the examinee's overall level of achievement or ability in a defined area based upon performance on the test. When item characteristics are known then IRT (also known as latent-trait theory) indicates that an estimate of the examinee's true ability can be ascertained based upon the sample of item responses obtained on the test.

It has been shown that IRT does not necessarily take into consideration the finding that high-scoring examinees may miss "easy" items, and low-scoring examinees may get "hard" items correct. Therefore, Mislevy (1993) notes that IRT may not reflect all of the information contained in item responses and total test scores. In addition, IRT does not measure learning because the function of the mathematical model is based upon the examinees' chances of obtaining a correct response based upon characteristics of the items. According to Mislevy (1993), a single IRT model cannot pre- and post-test data since it cannot reveal how students learn topics at different degrees or rates of efficiency.

Research comparing the performance of novices and experts has provided enlightening information on the process of learning. Although experts have mastery over more facts and concepts than novices, the differences extend even further. The ways in which experts organize their knowledge (e.g., schemas, chunking of information) is qualitatively different. In addition, information is more automatized and readily accessible based in part on increasing levels of practice and study. Mislevy notes that the challenge in

education is to discover "what experiences help a learner with a given configuration of propositions, skills, and connections to reconfigure that knowledge into a more powerful arrangement" (p. 28).

CONTEMPORARY TEST THEORIES

Limitations of CTT and IRT are noted in that they cannot assess qualitative differences in ability levels or developmental processes. In addition, they tend to assess ability in terms of quantity using a single unidimensional scale without attending to the problem solving process the examinee goes through to answer items correctly (Schnipke and Scrams 2002). Research in cognitive psychology and detailed analysis of the learning process informs more contemporary test theories. For example, graphic modeling (GM) theory extends current IRT to include complex multivariate assessment models.

The text edited by Norman Frederiksen, Robert J. Mislevy, and Isaac I. Bejar (1993) entitled *Test Theory for a New Generation of Tests* provides some insights into the future directions taken in understanding test theory that began over a decade ago. Braun (1993) notes that CTT and IRT are no longer adequate to explain what is currently known about the formation of human abilities. These statistical models cannot address the complexity currently acknowledged with respect to the nature of human ability and the learning process. In an era of increasing technological sophistication and high-stakes accountability, the field of test theory is growing to accommodate increasing knowledge in our quest to understand aspects of human learning.

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ISSUES AND TRENDS IN SUBJECT MATTER KNOWLEDGE

In this chapter, we discuss six key content areas that have shaped the curricula of both public and private schools from preschool through secondary school. These content areas include language arts, mathematics, music, science, social studies/history, and the visual arts. Common to all of these content areas is the development of standards. The curriculum reform agenda and philosophy of the late twentieth and early twenty-first centuries calls for excellence for both teaching and learning. Presidential candidates during this period have each marshaled in federal programs. Each of the following legislative acts—*America 2000* initiated by President George H. W. Bush, *Goals 2000* promoted by President Bill Clinton, and the *No Child Left Behind Act* (NCLB) promoted by President George W. Bush—identifies practices to improve the quality of America’s schools. At the core of each of these reform movements were standards and ways to assess that these standards have been met.

The term “standards” may be used in numerous ways. In general, there are content standards, curriculum standards, and performance standards. Content standards identify the concepts and skills that should be obtained in a course of study. Curriculum standards identify the goals and objectives of a discipline and organize the subject matter. Performance standards describe a demonstrated level of competency. What drives each of these standards is the increased demand for accountability from educational systems. It can be argued that an increase in measures of accountability stems from the government report in 1983 (written by the National Commission on Excellence in Education) known as *A Nation at Risk*.

The comments in the Report state, “Our society and its educational institutions seem to have lost sight of the basic purpose of schooling, and of the high

expectations and disciplined effort needed to obtain them” (pp. 5–6). This statement has served as the clarion call that established numerous national commission reports that were highly critical of public education. The national commission reports of the 1980s supplied the impetus to question the abilities of local and state governments and institutions of higher education and their role in education. National Commission Reports of the 1980s stemming from *A Nation at Risk* include:

- High School: A Report on Secondary Education in America (Boyer 1985)
- A Place Called School: Prospects for the Future (Goodlad 1984)
- Making the Grade: The Twentieth-Century Fund Task Force on Federal Elementary and Secondary Education Policy (Twentieth-Century Fund Task Force 1983)
- Horace’s Compromise: The Dilemma of the American High School (Sizer 1984)
- America’s Competitive Challenge: The Need for a National Response (Business–Higher Education Forum 1983)
- Action for Excellence: A Comprehensive Plan to Improve Our Nation’s Schools, Education Commission of the States Task Force on Education for Economic Growth (Education Commission of the States 1983)
- Educating Americans for the 21st Century: A Report to the American People and the National Science Board (National Science Board 1983)

It is interesting to note that almost all disciplines of study were affected by some type of governmental oversight and a written outcome in the form of a report. Each of these reports generated a required inter-

est in methods of assessment to measure educational achievement. The National Center for Education Statistics (NCES) was responsible for the measurement of achievement at the national level through high stakes testing. The national testing program is known as the National Assessment of Educational Progress (NAEP) and was based on the standards developed by each discipline. At present, NAEP (2003) administers tests in the arts, civics, economics, foreign language, geography, mathematics, reading, science, U.S. history, world history, and writing. The standards provide a reference for both content and process skills in developing instruments for assessment. The assessments measure the content, curriculum, and performance levels of the students. The standards outline what students need to know, understand, and be able to do at different grade levels. The standards for teachers generally include objectives for teaching, professional development, assessment, and required content. In addition, certain national organizations' standards have gone as far as to identify the requirements for educational programs and educational systems. Measures of accountability have also reached institutions of higher education. For example, national organizations such as the National Council for the Accreditation of Teacher Education (NCATE), Teacher Education Accreditation Consortium (TEAC), and the National Board for Professional Teaching Standards (NBPTS) have also developed standards for each of the disciplines involving teacher education. At the state level, the Interstate New Teacher Assessment and Support Consortium (INTASC) was established in 1987 by the Council of Chief State Officers (CCSO). INTASC is comprised of national education organizations, state agencies, institutions of higher education involved in the reform of education, initial teacher licensing, and continuing professional development of teachers. INTASC has ten principles related to knowledge, dispositions, and performances expected of a beginning teacher. To avoid the problem of competing paradigms, each of the agencies' standards is interchangeable (see Table 4.1).

The standards movement has changed the manner in which teacher education institutions prepare teachers. It is suggested that the models of teacher education have changed from input measures (e.g., numbers of classes, type of degree, number of teaching hours, grade point average) to output measures (e.g., performance related activities). As a result of this change,

researchers in various fields have questioned the utility of the standards (Delandshere and Petrosky 1998; Johnson and Erion 1991; Kraft 2001; Walsh 2001). In fact, much has been written to suggest that there is no clear consensus in the field of education regarding the content represented by the standards, nor is there empirical evidence to support higher education achievement (Johnson and Erion 1991; Kraft 2001; National Research Council 2001).

Each of the entries in this chapter will address the issues and concerns with distinct subject area disciplines throughout the grade levels. Each discipline is represented by a specialized professional association, often referred to by its acronym—SPA. The SPAs are responsible for deciding what is important in terms of content, process, and product in their respective disciplines. This is accomplished through consensus among its representatives. Each of these associations has determined its own set of standards that must be met in order for a teacher education institution to become nationally recognized. The associations publish guidelines and directions that teacher education institutions must follow in order to achieve accreditation. Each of the disciplines is associated at the national level with either a SPA or a set of standards that have been developed to guide study within the discipline. They are: (1) the National Council of Teachers of English (English/Language Arts); (2) the National Council of Teachers of Mathematics (Mathematics); (3) the National Association for Music Educators (Music); (4) the National Science Teachers Association; (5) the National Council for the Social Studies (Social Studies/History); and (6) the National Standards for Art Education (Visual Arts).

Stephen J. Farenga and Daniel Ness

LANGUAGE ARTS

The term language arts includes reading, writing, speaking, listening, and, more recent additions, viewing and visually representing that which is understood as language. From infancy onward, these aspects of language arts interact with developmental cognitive stages; in due course, with appropriate educational experiences, this “joining” results in higher level reasoning.

Table 4.1

List of National Standards for Teacher Education

NCATE Standards	NBPTS Standards	INTASC Principles
1. Candidate Knowledge, Skills, and Dispositions	1. Teachers are committed to students and their learning	1. The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students.
2. Assessment System and Unit Evaluation	2. Teachers know the subjects they teach and how to teach those subjects to students	2. The teacher understands how children learn and develop, and can provide learning opportunities that support their intellectual, social, and personal development.
3. Field Experiences and Clinical Practice	3. Teachers are responsible for managing and monitoring student learning	3. The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.
4. Diversity	4. Teachers think systematically about their practice and learn from experience	4. The teacher understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills.
5. Faculty Qualifications, Performance, and Development	5. Teachers are members of learning communities	5. The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.
6. Unit Governance and Resources		6. The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.
		7. The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.
		8. The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of the learner.
		9. The teacher is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.
		10. The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well being.

Source: NCATE 2002; NBPTS 1996.

First, each of the various aspects that constitutes the whole needs to be defined. Speaking refers to the use of language (words) to communicate on a progressively more sophisticated level; listening is the ability to understand the increasingly complex messages; reading refers to the explicit and implicit understanding of the message inherent within the words that appear on the printed page; writing is the cognitive culmination of the above to express knowledge, ideas, feelings, and/or thoughts in written form. Viewing refers to the perception critical to the “knowing” of what has been sent; reading is

really a cognitive and not a visual process. “Seeing” is achieved by the eyes in the role of a camera; the brain becomes the translator. Visual representation is the manner in which the message is sent without the use of speech.

Infants have the capacity to make sounds, to hear the noises within their environments, and to utilize rudimentary perception. Eventually, with appropriate educational experiences, the adults’ innate syntactical structures become more mature and complex as the interrelatedness of language arts expresses itself in higher level reasoning.

BACKGROUND AND PHILOSOPHICAL UNDERPINNINGS

Past discussion and research regarding the development of language arts (speaking, listening, reading and writing), would make up its own encyclopedia. Thousands of years ago, early people used language arts to communicate life experiences; cave drawings told stories of events that could be comprehended by others. These were the early visual representations that continue to be “read” and comprehended by literate adults today.

Early sounds or speech allowed for communication between peoples. Linguists suggest that clicking was part of primitive languages; similarities among various languages today identify “families.” Even the kinds of words that have evolved connote a common cultural heritage. Many synonyms for snow identify nations’ climatic history; speech that specifically differentiates between maternal or paternal relatives offers up cultural patterns; languages that ignore tenses suggest other concepts of time.

Speech itself is universal; infants in their cribs enunciate sounds known to all the languages in the world. As children hear specific “noises” in their cultures, they repeat those necessary for their environment. Other sounds, alien to their particular society, are lost and difficult to regenerate later.

Certain aspects of syntax are also innate, as originally suggested by Noam Chomsky (1965). The noun is the first part of speech that all children use, usually the simple name for their major caregiver, “ma” or “pa.” The second part of speech to be used, also universal, is that of the verb. Even such simple syntactic structures as plurals and tenses must be coded in the evolutionary process. Who has not heard a child refer to “gooses” and “oxes” and “runned” and “goed?” Certainly, the youngsters have never heard adults utter such words; children overgeneralize the rules that identify “s” as a plural definer and “ed” as a past tense selector.

In the same evolutionary pattern, the first sentence structure that a child uses is that of a simple action. An example of this is: “My mother runs.” Eventually, even this simple structure is elaborated upon with the introduction of adjectives and adverbs and phrases, such as “My charming mother runs quickly into the street.” The next sentence structure that appears is that of the compound sentence such as “My mother runs and my father walks.” Again, with

maturity, this sentence is engulfed with qualifiers. The final and most sophisticated of possible sentence structures is the complex sentence; this syntactic structure requires a level of thinking that notes relationships between and among parts of the sentence. In this structure, “when my mother runs then my father walks,” the creator has recognized cause and effect. Thus, this ability coupled with the embedding of ideas in as terse and clear a manner as possible is the ultimate recognition of reasoning in writing (first noted by O’Hare 1973).

Carol Chomsky (1972), in her research, indicated that the understanding of the passive voice is also developmental. When young children are asked to explain “the doll is easy to see,” they perceive the doll as doing the seeing. Understanding of the sentence comes as the reasoning processes of the youngster matures. The masters of writing are those who have the education, the knowledge base, the skill in reading, and the higher level reasoning that allows them to comfortably use different voices and complex and embedded sentences.

Reading, early in our history, was viewed as a skill that needed to be limited to the aristocracy. Thus, up to the eighteenth century, reading and writing were not the province of the common man. In fact, even the Bible was viewed as too seditious to be within the realm of the average person; only a bona fide leader of the church could translate what was being said and its meaning. The concept that all people in a society have the right to learn to read and write is radical; such a premise requires a government that either espouses democratic ideals and/or needs a literate populace for economic progress. As has been noted by writers and philosophers for hundreds of years: “The pen is mightier than the sword” (Andrews 1993). Or, as translated in a later century by John Dewey (1962), the purpose of education is to develop citizens, therefore, the populace must be literate. Such a state is possible only if the individuals reach the Piagetian cognitive stage of formal operations or abstract reasoning.

CURRENT PRACTICES IN PSYCHOLOGY

The decision to encourage a literate nation requires people who can speak, listen, read, write, and rea-

son. Head Start is a federal program that has proven that it can educate minority children in all the pre-skills required for reading. The results of this program have been statistically significant in preventing school dropouts (approximately 25 percent of the American population are not graduated from high school), and in encouraging women to raise families at a later age so that they can first complete their education.

While the schools periodically suggest that very young children should learn to decode, research clearly establishes that differences in letter shapes require a somewhat older child. Instead, early emphasis is on listening to fine children's literature so that youngsters hear the rhythm and nuance of language and then on the teaching of pre-reading skills. Marie Clay (1985) notes that children who evidence early difficulties in learning to read seem to have problems throughout their school careers. Thus, she introduced an effective remedial program that selects early problem readers and provides them with expert, one-on-one support.

Prior to the dissemination of her program, researchers attempted to select the one best method to teach first graders how to read. Bond and Dykstra's (1967) study noted that the single most important variable was not the method but the teacher who needed to have an expertise in the field and believe that all children can learn. If these criteria were met, almost all the youngsters would learn to read, no matter what the method. Other researchers expanded these results by indicating that youngsters more easily learned to read and write when the materials were meaningful and purposeful to them and that great literature spoke to children above and beyond the printed page.

Unfortunately, those who cannot decode are prevented from amassing the knowledge base that is associated with the act of reading and from increasing the depth and breadth of their vocabulary. This latter skill correlates highly to intelligence; excellent and extensive reading guarantees an enriched vocabulary that allows the speaker to hone in on specificity of thought and action. Thus, a good reader, as Frank Smith (1982) noted, recognizes that reading is a "psycholinguistic guessing game" and that the more information the reader actively brings to the process, the easier the new knowledge will be incorporated within the known.

Earlier than Smith's clarification of the steps in the reading process, researchers were curious as to how children learned to comprehend and why some didn't once they could decode. Thus, they moved from "learning to read" to "reading to learn" (usually around third grade) In Delores Durkin's (1978/79) study, she visited classrooms to observe the methods used for teaching comprehension. She saw none; Durkin questioned how some children learn to comprehend since no one seems to be teaching strategies.

Since then, the emphasis is on encouraging and uniting students' reasoning and reading comprehension. The logician George Henry (1974) perceived of reading and English as two sides of the same coin that need to be joined together. Further, Henry's premise is that learning occurs when teachers use universal themes whose ideas are explored through the reading of the best examples of the literary genres. In this manner, all of language arts is integrated; this method can be extended to the integration of other disciplines. To Henry, the art of learning was creative, utilizing both analysis (noting differences) and synthesis (seeing similarities) within each universal theme and subtheme. Thus, students are encouraged to see, within the literary selections, the similar in the different and the disparate in the familiar. In this manner, the students create new concepts that have not existed previously. Other researchers suggest that all novel and creative ideas are based upon the similar in the disparate. In this manner, the mystery of DNA is unraveled; the strands are mirror images. In great literature, such as *The Grapes of Wrath* by John Steinbeck, the characters represent the opposing concepts of life and death, love and hate, good and evil, and so forth.

Then comes the question of how we begin the teaching of reading in language arts. Is it a "bottom-up" or a "top-down" process? The former concept suggests that learning is made up of discrete isolated bits of information. Thus, the bottom-up concept of learning to read requires first the understanding of the alphabet, then the sound-symbol system (phonics), then simple words, then very easy books, then step-by-step movement up the learning ladder. The top-down process champions the idea that first students read the book, then they look at words and, eventually, they understand the concept of letters and sounds. Strict adherence to either approach has given

us the constant battle between phonics and “whole language.” This either/or approach led to the failure of the California system that attempted to only use “whole language,” which was, itself, an answer to the failure of the phonics system alone.

Some decades ago, standardized reading tests assumed that any error was as valid and significant as any other. Thus, if the reader used an “an” instead of a “the,” this mistake was viewed as seriously as if the reader called an elephant a giraffe and both “differences” would be considered equal. It was only when Kenneth Goodman (1965), took another look at reading tests and devised the Miscue Analysis that a more judicious viewpoint was interjected. In this approach, errors are judged by whether or not they change the meaning of the reading. For example, if a child says “home” instead of “house,” the meaning of the passage has not been jeopardized. However, should the youngster state “elephant” instead of “house” then that is an error because the meaning, which is considered the purpose of reading, has been changed.

The National Assessment of Educational Progress (2003) tests the reading and writing prowess of American children in grades four, eight and twelve. In 2002, the reading progress of students in grades four and eight showed an increase over 1992, even though it was not statistically significant; for grade twelve, the scores in 2002 were below that of 1992.

The correlation between reading and writing is quite clear. Anyone who is considered a good writer is also known to be a good reader. The reverse does not necessarily hold. Just because an individual can read well does not mean that superior writing will ensue. Contrary to this rather obvious correlation, writing was taught as an isolated subject until quite recently. It was only when O’Hare began his studies that a logical understanding of what constitutes more sophisticated writing was attempted. The sense was that writing becomes more complex as the individual uses more sophisticated sentences and can embed ideas. Such growth continues throughout an individual’s lifetime. Thus, the most mature writing is noted in people who have at least a college education and who write for a living and whose written work is found in magazines the caliber of *The Atlantic Monthly*.

From this beginning and the more inclusive concept of language arts as requiring reasoning, writing

is viewed as a more complex activity than simply checking for grammatical and spelling accuracy.

Thus began the writing corollary to the new reading approach. Researchers such as Graves (1994) and Calkins (1983) note the significance of the writing process as a way of developing recursive, thinking writings. In this approach, approximately three-quarters of the time is spent on the “front end” aspect of writing. That is, the selection of a topic, brainstorming, categorizing, “chunking,” outlining, and writing the first sentence of each paragraph. The first draft takes a minimal amount of time. The remaining efforts are used for revising and editing. This approach encourages writers to recognize the importance of thinking in writing; correct grammar, while necessary, is really only a minimal aspect; the paramount emphasis is on the ability to effectively communicate.

The National Assessment of Educational Progress that tests the writing prowess of students every four years was last administered in 2002. The grade levels that appear in these tests are grades four, eight, and twelve. The percentage of fourth-graders who scored at or above “basic” and at or above “proficient” increased between 1998 and 2002. The percentage of eighth graders at or above Basic decreased from 1998 to 2002 but the Proficient level increased between 1998 and 2002. However, for grade twelve, the percentages of Basic decreased between 1998 and 2002.

Perhaps the higher grades for fourth and eighth grade may suggest that we are finally beginning to offer our students appropriate educational experiences in language arts so that they may achieve to their potential and develop metacognitive skills. However, the decline in the writing scores of twelfth graders may suggest that the educational system has not yet instituted an integrated language arts experience that includes the writing process; such a program can guarantee literacy for all students.

EFFECTIVE PRACTICE IN LANGUAGE ARTS EDUCATION

Those programs that are developed based upon research in the field are the ones that are most successful. They use an integrated approach to language arts for all children throughout the learning curve. From

their earliest days, youngsters need a language-rich environment that broadens and deepens throughout a lifetime. In this manner, children absorb the richness and ambiguity of language, from nursery rhymes to the best examples of all literary genres. From the beginning, letters and sounds, phonemes and graphemes, are presented in an integrated fashion.

The classrooms that utilize “big books” provide the opportunity for all children to follow story patterns and to absorb the redundancy of language learning. Elementary school youngsters are introduced to the language experience approach; they write, as a class, about events that are within their knowledge base and are, therefore, meaningful and purposeful to them. As children are introduced to the best examples of all literary genres, they mimic the form and voice of the author in their own writing.

Successful language arts programs are found wherever integrated learning unites models of reasoning, reading, and writing in a significant and resolute manner. These programs are located in schools and districts where the educators are themselves knowledgeable and committed. While higher socioeconomic communities have more money, they have no lock on quality as witnessed by *Schools that Work* (Allington and Cunningham 1996) and Stracher’s (2002) discussion of what a South Bronx elementary school could achieve in its language arts program.

In the same manner in which all children need to discover the magic of language through their own zone of proximal development (Vygotsky 1978), so too do all districts need to claim ownership for their language arts programs. Programs that are imposed upon schools are almost guaranteed to fail. Rather, those districts whose staff meet together to determine what standards will be established for the K–12 language arts program and its implementation are the most effective (Miller 1998).

In addition, effective language arts practice includes those students whose learning problems are usually centered on decoding and spelling deficits. Modern technology allows for the “reading” of books via tapes and audiovisuals. The use of spell check on computers lessens the problems of orthographic uncertainty. Thus, these youngsters, also, can then achieve to their potential.

Further, to provide for maximum writing growth, language arts programs support reflective journal writing; in some, students opt to “dialogue” with

the teacher about perceptions of the class or readings or experiences. Portfolios establish the independence of students who include those writings perceived as representing their unique qualities as effective communicators. Often, the writers include their brainstorming, rough drafts, and revisions; all of which indicate the efforts expended for clarity of communication. The reality is that “Becoming a good writer or teacher of writing requires education and experience and it is always labour intensive” (Klein and Olson 2001, 234).

When youngsters view themselves as authors, they take the writing process seriously and begin to make sense of their lives through their own readings. Of course, such accomplishments require not only competent and committed teachers who believe that they “own” the process, but administrators and communities who share in the goal and its responsibilities (Chihak 1999).

To summarize, those language arts programs that make a significant difference in the achievement of their students unite well-qualified teachers who continue to receive excellent in-service training, who believe that their students can and will succeed, who can provide a one-to-one remedial program for those language arts students who require such service, who utilize the finest literary genre examples, and who integrate all learning (Robinson 1991; Briggs and Clark 1997; Slavin et al. 1994).

Effective language arts programs develop life-long learners who are forever entranced by the magic and power of words, speech, stories, and writing as they translate their knowledge into positive action.

Dorothy A. Stracher

MATHEMATICS EDUCATION

Today, no one can live without mathematics. At work and at home, while reading, relaxing, shopping, interacting with others, and making practical decisions, people are compelled to make use of mathematics, and often to employ its language and methods. The goal of a mathematics education is to prepare students for these tasks, as well as to provide for the further development of new mathematics knowledge.

HISTORY OF MATHEMATICS EDUCATION

The origins of mathematics education date to pre-historic times, when people were first faced with the necessity of comparing, counting, and measuring, and thus of applying mathematics—in however primitive a form—and teaching others how to apply it. Papyrus scrolls from ancient Egypt and clay tablets from Babylon which have survived to present times testify to the relatively high level of proficiency at problem solving that was achieved by these civilizations (Eves 1990). Most likely, most of these materials were composed as manuals or textbooks for the instruction of clerks or priests who had to carry out practical calculations.

In ancient Greece and during the Hellenistic period, schools appeared that offered a deep and systematic course in mathematics. One of the first examples of research in mathematics education is presented in Plato's *Meno*. In this piece Socrates conducts a discussion with an observer about teaching mathematics concepts to a young boy. Euclid's *Elements*, which for centuries remained the basic source of learning in geometry, was written as a textbook for these schools. Van der Waerden (1961), a historian of mathematics and a mathematician in his own right, justly calls Euclid (about 325 B.C.E. to about 265 B.C.E.) the greatest mathematics teacher of all time.

In Medieval Europe, mathematics education (along with other branches of culture) underwent a decline. Familiarity with four of the thirteen books of the *Elements* was considered proof of a deep grasp of geometry. Still, the seven liberal arts—the seven disciplines that comprised medieval education—included geometry and arithmetic.

In the East (China, India, and the Arab world), mathematics and mathematics education were for many centuries much better developed than in Europe. The discovery of the mathematics of the Arab world contributed to the rise of mathematics in the West at the end of the Middle Ages. An equally important role was played by various social developments. The sociologist Max Weber (1958) wrote about the “disenchantment” of the world that took place during this period. People began to describe the world in terms that were rational and scientific rather than irrational and mysterious. Developing and

using mathematics knowledge constituted an integral part of an increasingly rational orientation toward nature, and mathematics became a means of both understanding the world and solving practical problems.

Beginning in the sixteenth and seventeenth centuries, many more people started studying mathematics than ever before. More and more thought came to be devoted to how mathematics should be taught in class and how textbooks should be written. Elementary mathematics education became more and more widespread in schools. Higher mathematics education, offered in various colleges and universities, also gradually stopped being the province of the privileged few. In the remaining discussion of mathematics education below, we generally focus on K–12 mathematics education within schools.

The development of mathematics teaching in the United States is well documented in the fundamental *History of School Mathematics* edited by George Stanic and Jeremy Kilpatrick (2003). The first school textbooks used in America were borrowed from England. They were devoted to arithmetic, which constituted a vocational subject essential for merchants and craftsmen. The enormous number of rules that had to be memorized without being explained in any way made the subject quite a difficult one. Benjamin Franklin, for example, failed it twice as a child (Cohen 2003).

Gradually, mathematics education started making use of more novel pedagogical techniques. Warren Colburn, a follower of the influential Swiss pedagogue Johann Heinrich Pestalozzi and the author of a textbook *An Arithmetic on the Plan of Pestalozzi with Some Improvements* (1821) that by the 1850s had sold more than two million copies, advised teachers to pose problems in such a way that students could “discover what is to be done, and invent a way to do it” on their own (Cohen 2003, p. 58). Likewise, in teaching algebra and geometry, efforts were made to make these subjects “more comprehensive, dynamic, and functional in character,” as the author of geometry textbooks John Swenson wrote in the 1930s (Donoghue 2003a, 347).

Mathematics education came to be seen as an independent area of professional research. At the very end of the nineteenth century, preparatory programs for high school mathematics teachers began operating in the United States. At the beginning of the twen-

tieth century, they were followed by graduate programs devoted to mathematics education. Mathematics education journals emerged around this same time. The first issue of *The Mathematics Teacher*, which is today the most popular periodical devoted to mathematics education, was published in 1908. The largest national associations of mathematics educators—the Mathematical Association of America (MAA) and the National Council of Teachers of Mathematics (NCTM)—appeared in 1915 and 1920, respectively (Donoghue 2003b). In 1908 David Eugene Smith, a professor at Teachers College, Columbia University, proposed the establishment of an international commission on mathematics education. This commission has continued to function (with an interruption of activity between the two world wars). Since 1969 this commission conducts worldwide congresses once every four years at which mathematics educators from around the world have the opportunity to exchange their views and findings.

MATHEMATICS IN K-12 EDUCATION

The contemporary K–12 course in mathematics may be summarized using the five content standards of the NCTM (2000): number and operations, algebra, geometry, measurement, and data analysis. Data analysis and discrete mathematics, as studied in various elementary and secondary school courses, are relatively new fields in K–12 education. The fact that they are now studied in school reflects contemporary society’s need to process enormous amounts of new information. Studying and using numbers, using algebraic symbolism, solving equations or inequalities, analyzing various characteristics of two- and three-dimensional shapes, using various techniques for measuring areas and volumes—all of these are classical topics in mathematics education. However, today, due to technological developments, the interdisciplinary nature of many school subjects, and developments of our understanding of mathematics and mathematics learning, both old and new areas of mathematics must be studied in new ways.

The NCTM has expressed this need by formulating five process standards: problem solving, reasoning and proof, communication, connections, and Representation. In learning school mathematics, students must not see it as a frozen subject that has to

be learned, but as a science in which new problems constantly arise—a science that is open to creativity, including their own individual creativity that uses reasoning as an instrument. Students must see mathematics as being useful for all types of human activities, and they must understand that its branches are not detached from one another but interconnected by countless links. Students must come to understand graphs, tables, diagrams, symbols, and other forms of representing information; they must also learn to express their ideas in mathematical language and to present information in different ways.

The NCTM team of mathematics educators (including Joan Ferrini-Mundy, Jeane Joyner, W. Gary Martin, Barbara Reys, Alan Schoenfeld, and Edward A. Silver) developed content and process standards, as well as principles (to be discussed below). The NCTM’s focus on content as well as process standards has its roots in historical and contemporary debates about mathematics education. Since the very beginnings of the establishment of mathematics education as a field, mathematics educators, mathematicians, other educators, and various interested parties (including parents, businesspeople, policymakers, politicians, and college faculty and administrators) have debated various aspects of mathematics education and its research. These debates about how mathematics should be taught and learned have been so vigorous that observers have referred to them as the “Math Wars.” What *are* the best ways for teachers to teach mathematics and for students to learn mathematics? While most would agree that there is no single way to answer this question, cyclical shifts in beliefs about mathematics education continue to occur. At some periods in mathematics education history, a focus on basic skills teaching and learning to improve students’ mathematical knowledge predominated. At other times, a focus on developing transferable problem solving skills and conceptual understanding of mathematics concepts was prevalent. Textbooks, other curricular materials and their uses, standardized assessments, and teacher training resources all reflect these sometimes competing ideas about what constitutes the best methods and philosophies of teaching and learning mathematics. In addition, current discussions of research paradigms in mathematics education reflect this tension—with some advocating the use of random assignment in statistical studies to determine which mathematics

curricular programs improve mathematics achievement, others advocating narrative descriptions of emerging and/or effective mathematics teaching and learning practices, and still others advocating a combination of these two approaches.

INFLUENCES ON CONTEMPORARY MATHEMATICS EDUCATION

These contemporary questions about what constitutes mathematics education can be viewed from sociological, psychological, and cultural as well as mathematical perspectives. Mathematics education, as well as education in general, has at different times been significantly influenced by the work of psychologists, including Edward L. Thorndike (1874–1949), Max Wertheimer (1880–1943), Jean Piaget (1896–1980), and Lev Vygotsky (1896–1934). In particular, Piaget, who studied the development of the human intellect, indicated the limits of what can be achieved by mathematics education at each stage of development and suggested ways in which mathematics education should be structured. Theories of constructivism, which took shape under the influence of Piaget's (1995) and Vygotsky's (1986) work, have been highly influential in mathematics education.

A watershed in the development of mathematics education is represented by the works of the mathematician George Polya (1887–1985), which contain profound discussions of mathematical creativity, considered as something accessible not merely to professional mathematicians, but to laypeople and students as well. Polya (1954, 1973, 1981) drew attention to the effectiveness of teaching problem solving to all students, described a series of heuristics useful for problem solving, and offered numerous valuable observations and pedagogical recommendations.

These (and other) theories are reflected in the ways in which the contemporary philosophy that all should learn high quality mathematics is enacted in teaching, learning, and assessment. In particular, constructivist theories pertaining to mathematics education integrate theoretical discussions of culture, pedagogy, and students' prior mathematics knowledge. These have influenced the development of curricula and teaching strategies to help students generate knowledge based on some of their own out-of-school as well as in-school experiences with math-

ematics. Culturally relevant pedagogy and multicultural education, two recently emerging areas of educational theory, also seek to address the shifts in teaching practice and philosophy that have come with the new emphasis on "mathematics for all." Educational theorists Gloria Ladson Billings (1995) and James and Cherry Banks (2004) have written that these new frameworks were developed to address historical and current inequities in the education of students of color in the United States.

CHALLENGES FACING U.S. MATHEMATICS EDUCATION

There are many challenges facing U.S. mathematics education, from external as well as internal sources. In recent years, the mathematics achievement of U.S. students has been compared to that of students in other countries through large-scale comparison studies such as the TIMSS (Trends in International Mathematics and Science Study, formerly known as the Third International Mathematics and Science Study) conducted in 1995, 1999, and 2003. TIMSS revealed that on average (and with the exception of a few subtopics), U.S. eighth grade students most often performed as well as students from several countries, including Bulgaria, England, and New Zealand. They performed less well than students from a number of countries, including Singapore, South Korea, Japan, the Russian Federation, and Australia. Researchers have pointed out that differences in performance may be in part explained by national differences in curriculum, teacher education and development, and population characteristics. James Hiebert, Liping Ma, Curtis McKnight, William Schmidt, Howard Stevenson, and James Stigler, among others, have conducted comparative research exploring factors affecting mathematics teaching and learning in the United States and other countries (Ma 1999; Schmidt et al. 2001; Stevenson and Stigler 1992; Stigler and Hiebert 1999). This research has helped to promulgate ideas about revamping mathematics curriculum, assessment, teaching, and learning in the United States. Findings from TIMSS and other related studies have affected policy regarding mathematics education in many countries. For example, based on U.S. student performance in TIMSS, several U.S. presidents (e.g., William J. Clinton and George W. Bush) and their administrations publicly paid greater attention to mathematics education.

Recent and sitting presidents have all made public statements regarding U.S. mathematics performance in the world and instituted national policy recommendations focusing on national testing and teacher development for improving mathematics performance.

Within the United States, a major problem in mathematics education is the diminishing numbers of students enrolling in mathematics throughout secondary and postsecondary education. In the early 1990s, from ninth grade on, roughly half of the school population dropped out of mathematics in any given year. David Lutzer of the American Mathematical Society writes that of the nearly 12 million U.S. students graduating from college in 1998 only 1.05 percent (or approximately 12,000) were mathematics majors. He estimates that only about 3.8 percent of mathematics degree holders go on to earn advanced degrees in mathematics (Lutzer 2003). Because shifts in the nature of employment in the United States have led to the creation of many jobs that require substantial mathematics knowledge and problem-solving skills, the issue of retaining more young people in mathematics has become increasingly important. Many formal and informal initiatives have emerged to address this issue. Some of these target the training of teachers through professional development in order to develop their repertoire of teaching strategies and mathematics content knowledge. These areas have been demonstrated to influence student attitudes towards mathematics as well as student performance. Other initiatives target student motivation and attitudes toward mathematics, suggesting that positive attitudes toward and high self-efficacy in mathematics may lead to increased performance and participation. While some of these initiatives have been created by private organizations, other policy-driven initiatives have emerged as a result of school district and state requirements. For example, in an effort to increase mathematics course taking among high school students, many U.S. states in the 1980s and 1990s increased high school graduation requirements in mathematics. In previous years many states required two years of mathematics to graduate from high school. The National Center for Education Statistics (NCES) has compiled data that showed that by the year 2000 at least 20 states had increased their requirements to three years of mathematics (NCES 2003).

In addition to declining mathematics participation

as students progress through school, great attention has been given to the underperformance in mathematics of specific groups in U.S. society. A major contributor to low mathematics performance is the lower rates of mathematics participation among some groups. Over the years, intervention programs seeking to increase the performance and participation of women and girls and underrepresented people of color (including African Americans, Latino/as, and Native Americans) in mathematics have emerged. For many years, girls and women were discouraged from participating in mathematics. After several decades of outreach programs targeting students and teachers and designed to increase the participation rates of girls and women, the performance gap in mathematics has narrowed substantially. It is nonexistent in early grades, but lingers in a forty-point gap favoring males in SAT mathematics performance. High school mathematics participation rates among males and females are near parity, but there is still a large gap (favoring males) in participation in college and graduate school mathematics.

NCES data show that gaps between the average mathematics performance and participation of Asians, Whites, Blacks, Latino/as, and Native Americans have narrowed over time but still persist. Linda Darling-Hammond and Jeannie Oakes write that structural issues (e.g., differential allocation of resources, teacher shortages, and school poverty) affecting education overall are linked to the participation rates and performance of underrepresented students of color—Blacks, Latino/as, and Native Americans (Darling-Hammond 1995; Oakes 1990). These issues are particularly acute in urban and rural areas, which have difficulty attracting, recruiting, and retaining qualified mathematics teachers. Emerging research from the College Board suggests that underrepresented students of color excel, as do other students, when they receive challenging and interesting mathematics and benefit from high teacher expectations. Thus, similar outreach programs (to those of girls) focusing on affective factors for underrepresented students have been developed and designed to improve mathematics outcomes for these students. Programs designed to improve teacher knowledge and pedagogy also target better mathematics education for underrepresented students of color.

In response to some of these challenges, the

NCTM (2000) has developed six principles (in addition to the standards discussed earlier), which reflect different perspectives (sociological, cultural, mathematical, and psychological) on mathematics education. The six principles (equity, curriculum, teaching, learning, assessment, and technology) were developed to help guide mathematics educators and policymakers' decisionmaking in mathematics education. The major component of the equity principle is that all U.S. students should receive rigorous, high quality mathematics instruction throughout their schooling careers. This is a significant shift from the prevalent beliefs and practices in previous eras that focused on preparing only a small fraction of secondary school students for advanced mathematics and college (Secada 1992; Tate 1997). The curriculum principle underscores the notion that mathematics as a body of knowledge consists of interconnected ideas. Rather than being exposed to mathematics as a set of discrete unrelated topics, students should explore, through focused and deep activities, the links between mathematical ideas (Fennema and Romberg 1999). The teaching and learning principles reflect the ideas that teachers should have high expectations for all students and have opportunities to continue to learn mathematics and ways of teaching it. Students should attain computational fluency as well as conceptual understanding, which require dynamic interaction between teachers and students in the mathematics classroom. Assessment should be ongoing, not just cumulative, and can also be informal as well as formal. Ongoing and informal assessments should guide instruction in the mathematics classroom. Finally, advances in the twenty-first century mean that students must become adept at using technology to solve problems. Throughout the course of their mathematics education, students should have opportunities to use technology to develop their understanding of mathematics and problem-solving skills (NCTM 2000).

All of the challenges and promises of mathematics education in the United States have roots in ongoing debates about what constitutes mathematics teaching and learning. Mathematics education occurs not just in the classroom, but also outside of it; external and internal pressures affect it. Discussions about mathematics education are rooted in sometimes competing and other times overlapping cultural, sociological, psychological, and mathematical perspectives,

and those influence the direction of policy, curriculum, teaching, learning, and assessment. Various constituencies (students, teachers, educators, mathematicians, researchers, administrators, and parents) all have vested interests in how mathematics is taught and learned in schools. Teachers, however, whether they are parents of very young children exposing them to mathematical concepts for the first time, or classroom instructors in the elementary and secondary schools, are probably the most important conduits of mathematics for students. Their education, training, and development have large effects on student learning and performance in mathematics. They are a key component of efforts to build upon the promises of and meet the challenges facing mathematics education in the United States.

Erica N. Walker and Alexander P. Karp

MUSIC EDUCATION THROUGH THE CASE OF BEETHOVEN'S EDUCATIONAL DEVELOPMENT

Ludwig van Beethoven (1770–1827) is one of the greatest musical figures of all time. Yet this fact stands in striking contrast to accounts of his unremarkable performance at school. Indeed, former classmates of his have remarked that not only had he learned virtually nothing in school, but he also exhibited no hint of his later genius. In fact, throughout his life, Beethoven experienced a variety of difficulties in such areas as arithmetic, orthography, and the proper usage of punctuation and capital letters. As late as 1820, Beethoven wrote to music publisher Nikolaus Simrock that he would prefer writing 10,000 musical notes over one letter of the alphabet, a preference arguably borne out in a good number of the letters he wrote throughout his life. One finds in those documents evidence of a gradually declining penmanship and inadequate “intellectual discipline” (Forbes 1967, vol. 1, p. 59). Moreover, though the young Beethoven demonstrated impressive musical skill and talent, his formal education in music was marked by neither a decisive moment, nor by, as Thayer puts it, “any positive evidence that he, like Handel, Haydn,

or Mozart, showed remarkable genius for the art at a very early age” (p. 56). Add to these facts and observations, the multitude of hardships he endured owing to his father’s alcoholism and abusive temperament, his mother’s untimely death (1787), his own bouts with asthma and melancholia, and the early onset of his hearing troubles (1797), which would progress to the point of near-total deafness, and one wonders how his musical genius might be understood. There is, moreover, the question of how his educational development corresponds to his genius in music. Given the many gaps in our knowledge and understanding with respect to the former, how can we know its relevance to the latter? Furthermore, if Beethoven’s competencies are difficult to assess, imagine if he were subjected to current educational assessment exams, particularly of the “standardized” variety. What might one learn from measurements aiming to determine skill and ability without addressing the matter of talent or genius? In this entry these and related questions are considered as they remain important and particularly timely for today’s educators. The focus is biographical and alludes to primary source material drawn largely from Beethoven’s own letters, documents, and conversation books (1991), and from individuals who knew him personally, including, Franz Wegeler and Ferdinand Ries (1987), Anton Schindler (1966), and Gerhard von Breuning (1992). What emerges from our inquiry are otherwise obscure dimensions and details of Beethoven’s personal character and creative approach, dimensions which reveal his rather unique educational development, here necessarily treated from outside the boundaries of the classroom—amidst people and places—and within the interior world of his creative mind. From the standpoint of human development and learning, to consider here Beethoven’s educational limitations and musical genius, both of which he confronted for the sake of his musical art, offers insights and raises important questions for educators. How, for example, does one address the needs of the “exceptional” child, a child who might be exceptional on either end of the learning spectrum? How might educators determine what is necessary for optimal learning in such cases? Is adherence to current student assessment strategies, including standardized testing, beneficial for such individuals? If Beethoven had submitted to such testing, what might his results have indicated

and, perhaps more importantly, what might they have omitted? Finally, how might educators aim to create an optimal learning environment that also takes into account the importance of developing the creative mind? There is no presumption here that such complex and challenging questions are easily answered. They are nevertheless raised in this entry to suggest the need for their consideration by today’s educators, particularly in the arts. Exploring the educational world and genius of the young Beethoven becomes the catalyst in this respect. Indeed, though it may seem that his story is for us remote, perhaps even irrelevant, it contains within it key educational issues that transcend time and place, issues worthy of our careful consideration.

GENERAL EDUCATION

Beethoven was born in Bonn and remained there until his permanent move to Vienna in 1792. The educational system in Bonn was supervised by the Academic Council, established in 1777 by the Elector Maximilian Friedrich. From about six to eleven years of age, Beethoven is believed to have attended the so-called *Tirocinium*, a Latin public school from which a small number of those enrolled would eventually proceed to the gymnasium (high school). According to Thayer, the curriculum there excluded arithmetic and writing (Forbes, ed., 1967, vol. 1, p. 58). However, Wegeler, our only primary source on Beethoven’s upbringing and early education, recalls that the curriculum included not only both of these disciplines, but reading and some Latin as well (Schindler 1966, p. 38). He says, moreover, that Beethoven’s education was “neither particularly neglected nor especially good” (Wegeler and Ries 1987, p. 14).

Beethoven’s public school education did not extend beyond the primary level. As his classmate Wurzer entered the gymnasium in 1781, Thayer speculates that this was the year when, for Beethoven, “all other studies were abandoned in favor of music” (Forbes 1967, vol. 1, p. 58). He explains that the main objective of Beethoven’s father, Johann, was to develop the young Ludwig’s musical genius into a “marketable commodity.” Thus, after age eleven, Beethoven’s formal education was entirely devoted to music. At the same time, he had to contend with an increasingly difficult home life. According to

Wegeler, Johann was a man of “no moral or spiritual strength” (Schindler 1966, 38), using his meager earnings to support both his family and his alcohol addiction. Paul Bekker wrote that he had “no sense of responsibility for his children’s education and welfare” (Bekker 1925, 4). Though earlier on it appears that Johann earned a reasonable living for his family, it was the young Ludwig who would have to provide any semblance of stability within the family. This would ultimately include earning money as well. To accomplish this, he would give regular piano lessons to the Breuning’s youngest son Lorenz (Lenz) and daughter Eleonore (Lorchen). Gradually, Beethoven would be treated as one of the Breuning children, of which there were four: Lorenz and two other sons, and Eleonore, who would become Wegeler’s wife. Ultimately, Beethoven would gain far more than recompense for piano lessons from the Breuning family. He found in Frau Helene von Breuning, a cultured twenty-eight-year-old widow of Court Councillor Emanuel Josef von Breuning, something of a mother figure, influencing both his social and educational development. It was with the Breunings, therefore, that Beethoven is said to have begun “his first serious artistic studies” (Bekker 1925, 10–11). Moreover, Beethoven’s social ties with them and their well-educated and cultured circle of friends and acquaintances doubtless mitigated against much of his family crises of finances, alcoholism, sickness, and death.

One frequent guest at the Breuning’s was Baron Ignaz de Cler, governor of the city. Stephan von Breuning’s son Gerhard describes him as a kind of “word-of-mouth newspaper,” reporting on news of the city (Breuning 1992, 21). Gerhard speaks also of two influential family members: his grandfather’s brother, Johann Lorenz von Breuning and a brother-in-law, Johann Philipp von Breuning. The former was a canon in Neuss who moved to Bonn to take charge of educating his brother’s four young children and to manage the family’s affairs. He remained there until his death (1796). The latter, Johann Philipp von Breuning, who was born in Mergentheim (1742), became first a priest (1769) and soon thereafter a canon, moving to Kerpen, where he remained until his death (1832). Gerhard describes him as “very clever and extremely kind” (p. 25). Family and friends, including Beethoven, enjoyed visits to his home in summer. Beethoven

would also play organ at the church there. Of their school years in general Gerhard would say that they were passed “amid the affection of uncles, aunts, and others” (p. 25).

Wegeler was a regular guest of the Breuning’s. Beethoven doubtless identified closely with him, particularly as his family, too, had financial hardships. Wegeler’s response to his circumstances was to focus on his education. This served him well as he was to eventually become a medical doctor. His character has been described by Gerhard as “charming and ambitious” (Breuning 1992, 25).

Education at the Breuning’s is said to have included a “thorough study of science and art” (Breuning 1992, 29). According to Wegeler, Beethoven “felt free” there, adding that “everything combined to make him cheerful and to develop his mind” (Wegeler and Ries 1987, 16). Thus his musicianship and his general education would continue to advance. With respect to the latter, it appears that he was exposed to the Greek and Roman classics, and the philosophies of Rousseau, Voltaire, Kant, and Hegel. Moreover, he enjoyed reading German literature and poetry, and exploring contemporary issues, including the French Revolution and related revolutionary initiatives. This exposure enabled him to close some of his educational gaps and to develop intellectually. Gerhard would say, moreover, that, despite the number of “gifted” and “ambitious” young people at grandmother Breuning’s house, it was Beethoven who remained the “center of animated interest . . . whose improvisations roamed over the piano of the house half the night through” (Breuning 1992, 29). As pianist and teacher of the piano at homes of the nobility, including the Breuning’s, Beethoven had acquired friends and patrons appreciative and supportive of his musicianship and future promise.

MUSICAL EDUCATION IN BONN

Obvious gaps in Beethoven’s general education are attributed to the brevity of his formal education and to the highly probable speculation that his out-of-school hours were largely devoted to music (Kerman and Tyson 2001, vol. 3, p. 73). The early years of Beethoven’s musical training on both piano and violin took place at home under the stern supervision of his father Johann, himself a court musician since the age of twelve—first as a treble, later alto, and, finally, as a

tenor. Johann served under Maximilian Friedrich, elector archbishop of Cologne, who resided at Bonn. He was not the first in the family to serve the electoral court. In fact, his own father, the Dutchman Ludvig van Biethofen (1712–1773), had the more distinguished musical career, joining the court in 1733 under Clement Augustus, elector archbishop of Cologne. He was first a singer there and then, in 1761, kapellmeister. Prior to his arrival in Bonn, he served as composer, singer, military bandleader, and organist at the Church of St. Jacques in Antwerp. We learn from Wegeler that, though Ludvig died early in his grandson's life, he was nevertheless an enduring source of inspiration for the young Ludwig (Wegeler and Ries 1987, 13). Beethoven is said to have enjoyed speaking with friends about his grandfather and to have often requested of his mother that she recount stories about him. He is also said to have bore little resemblance to either parent, instead resembling, "in his talent, habits and all of his mental traits, . . . this sturdy Dutchman" (Hubbard 1901, 37). It is interesting that Beethoven chose to have sent only one item from Bonn to Vienna: a portrait of his grandfather by Radoux, an artist at court.

Ultimately the court was served by three generations of Beethovens. Johann, in preparation for his son's eventual service there, would drag the reticent and tearful Ludwig to the piano for lessons and practice (Schindler 1966, 38). Beethoven's disinclination for both piano and violin playing did nothing to prevent his first public concert in Cologne on March 26, 1778, the announcement listing "various clavier concertos and trios" (Kerman and Tyson 2001, vol. 3, p. 73). This is the only known occasion upon which Johann presented his son as a prodigy. In fact, Beethoven had not exhibited the kind of "wunderkind" genius of Mozart. His musicianship had nevertheless developed to the degree that, by his ninth year, he had surpassed his father's musical competencies. Aware of this fact, Johann would pass his son's musical education to colleagues at court and to local and visiting musicians.

First among the more advanced musicians to instruct Beethoven was Tobias Friedrich Pfeiffer, who, for a time, lived with the Beethovens. A member of the Grossman Theater, Pfeiffer was a proficient tenor, pianist, oboist, and conductor. He is said to have kept a busy but rather informal schedule, particularly owing to frequent late-night visits—often in the

company of Beethoven's father—to the local tavern. Thus the young Beethoven had no regularly scheduled lessons. Instead, Johann and Pfeiffer would interrupt the boy's sleep for all-night lessons. Ludwig's mother appears for a time to have remained largely silent on the matter. Pfeiffer's lessons nonetheless appear to have been of substantial benefit to Beethoven. According to Wegeler, Beethoven "owed much to this teacher and was so grateful to him that even after he had gone to Vienna, he continued to make Simrock give him regular sums of money" (Schindler 1966, 39). A relative of Beethoven's, Franz Rovantini, would give him lessons on violin and viola. Rovantini, Pfeiffer and Beethoven, would regularly fill the house with ensemble playing upon flute, violin, and piano, respectively.

Johann arranged for his son's more informal music lessons with a number of local organists including Willibald Koch of the Franciscan Fathers, Hanzmann of the Minorite order, and Zensen of the minster (Wyn Jones 1998, 5). Beethoven's true mastery of the techniques of organ playing, however, was owing to Aegidius van den Eeden, organist at the Electoral court. Johann is said to have likewise arranged for these lessons, which included figured bass. Beethoven would later acknowledge their value for organists and pianists.

German composer, organist, and conductor Christian Gottlob Neefe (1748–1798) is said to be Beethoven's first important teacher, this despite Wegeler's claim that he had "little if any influence on the musical instruction of young Ludwig" (Schindler 1966, 39). Neefe settled in Bonn in 1779 to join the Grossman Theater and, in 1781, he succeeded van den Eeden as court organist at the electoral chapel. Shortly thereafter, Beethoven began training as his assistant. In 1782, during Neefe's brief departure from Bonn in 1782, the eleven-year-old Beethoven was left in full charge. Later that year, Beethoven assumed Neefe's position as cembalist during stage rehearsals. This involved directing the orchestra and sight-reading at the keyboard. By 1784, Beethoven secured the position of assistant organist. Thus, in contrast to what can only be surmised about Beethoven's approach to his earlier, formal education at school, in his musical studies he was lacking neither diligence nor ability. Moreover, he would continue to gain public recognition owing to Neefe's support in publishing his early works, including the

Dressler Variations and three *Kurfürsten* sonatas for piano. Neefe also praised Beethoven's musical talents in Cramer's *Magazin der Musik* (1783). From this public pronouncement one learns of Beethoven's impressive skills at the keyboard and in sight reading, his ability in thorough bass, his promise in music composition, and that, by thirteen years of age, he had apparently learned and largely mastered four instruments including the clavier, organ, violin, and viola. Moreover, and perhaps most importantly in terms of his developing musicianship, one learns that Neefe had introduced him to the music of Johann Sebastian Bach. For this, Lockwood would say of Neefe that he "earned his place in history." Count Ferdinand Ernst Waldstein is yet another individual of the Bonn years who would prove immeasurably beneficial to Beethoven's early career. A wealthy nobleman and himself a practicing musician, the count was to be Beethoven's first and most significant patron. According to Wegeler, Waldstein supported Beethoven "in every possible way," adding that he was "the first to fully appreciate his genius" (Wegeler and Ries 1987, 19). Wegeler also credits Waldstein with Beethoven having been sent by the Elector to Vienna and with his developing ability to improvise variations on a given theme. That Beethoven had dedicated to Waldstein his *Sonata in C Major, Opus 53*, was, for Wegeler, "proof" of his "undiminished gratitude" (p. 20)

When in 1792 Beethoven left Bonn permanently to reside in Vienna, he carried in his pocket a letter of encouragement from the count. The letter's closing line reads, "With the help of assiduous labor you shall receive Mozart's spirit from Haydn's hands" (Latham 1972, 4). As Wegeler would say, Count Waldstein was "the man Beethoven had to thank that the first blossoming of his genius was not suppressed" (Wegeler and Ries 1987, 20).

BROADER EDUCATIONAL INFLUENCES

With exposure to individuals such as the Breunings, Count Waldstein, and Neefe, among others, Beethoven's education was certain to exceed musical parameters. Neefe's own studies were in jurisprudence at the university in Leipzig. Moreover, he was himself interested in aesthetics, intellectual affairs, and contemporary literature. While at Leipzig,

he is said to have contacted the poets Christian Fürchtegott Gellert and Johann Christoph Gottsched, and to have introduced Beethoven to the new German literary movement, *Sturm und Drang* ("storm and stress"), with its more romantic aesthetic (Lockwood 2003, 32). Neefe was exposed to a rich cultural and artistic society that included "the musician Johann Adam Hiller, the philosopher Johann Jakob Engel, the engraver Johann Friedrich Bause, and the painter Adam Friedrich Oeser" (Wyn Jones 1998, 7). Neefe's success as a composer of German opera was cultivated by Hiller, his teacher. As an educated and widely acclaimed musician, Neefe, a Protestant, might have settled, as Wyn Jones suggests, in Leipzig or Hamburg. He nevertheless remained in Bonn, teaching keyboard instruments and music theory to the young Ludwig among others.

As a member of the *Illuminati* sect of Freemasons, Neefe supported French revolutionary ideals. In 1787, after this sect was largely suppressed, he would join Bonn's *Lesegesellschaft*, a reading society. Beethoven benefited from his teacher's affiliation with this group, receiving commissions to compose two cantatas: the first (WoO 87), on the death of Joseph II, and the second (WoO 88), for the elevation of Leopold II.

Beyond individuals such as Neefe and Waldstein, Beethoven would be influenced intellectually, politically, and artistically by the broader social environment of Bonn itself. At the very least, one may speak of its "indirect influence" on such compositions of his as *Fidelio*, *Egmont*, and the *Ninth Symphony* (Coldicott 1991, 60). Leonard Meyer is cited for having a similarly broad view on studies of musical influence, studies in which there can be a tendency to "depict the issue of influence as purely musicological" (DeNora 1995, 5). This, in turn, would "side-step the issue of social circumstance." In Lewis Mumford's view, the city itself can become "the chief instrument of education," the "wider school of the young and the university of the adult" (Mumford 1938, 474). As for the Bonn of Beethoven's youth, it was rather cosmopolitan, particularly owing to a rich musical life at court. There were, for example, regularly scheduled performances of Italian comic opera, French *opéra-comiques*, and German opera and *Singspiel*. Theatre performances alternated between court in the winter months and elsewhere in the sum-

mer. Aristocrats and court officials sought music lessons from individuals such as Ludwig's father, Johann. Such lessons would eventually pass to his son and would, in their way, enhance his own intellectual and artistic development.

Bonn's political, cultural, and intellectual affairs were to come under Vienna's influence once Maximilian Franz became elector in 1784. It has been said that, not unlike his brother the emperor, he encouraged much of the cultural and intellectual life in Bonn. His personal library, which contained a rather diverse and impressive collection of texts, underscores his interest in and dedication to this initiative.

After his permanent move to Vienna, Beethoven maintained a connection with Bonn by writing letters to the various friends and acquaintances he had made there, including Simrock and Wegeler, among others. In a letter to Wegeler (1801), he declares that the day they meet again and greet "Father Rhine" will be "one of the happiest" of his life. As that day was not to be realized, memories and letter writing would be his only link to Bonn, the place of his earliest development and achievement in music.

EARLY YEARS IN VIENNA

Little is known of Beethoven's first visit to Vienna. He arrived there in early April of 1787 to study with Mozart. Due to his mother's failing health, however, he departed shortly thereafter for Bonn. A nineteenth-century anecdote leaves Mozart less than enthusiastic about Beethoven's piano playing, though he was impressed by his improvisational skills, for which he is quoted as saying, "Mark that man; he will make himself a name in the world" (Wyn Jones 1998, 17). Indeed, at this stage in Beethoven's developing musicianship, he had not made a mark comparable to that of either Haydn or Mozart. Music scholar Wyn Jones describes the development of Beethoven's musicianship during the remaining five years in Bonn as "quiet, though steady" (p. 19).

Shortly after Beethoven's permanent move to Vienna in December 1792, he began lessons with Haydn, who assigned to him Fux's *Gradus ad Parnassum*, a standard counterpoint text, first published in 1725. Mozart, too, was skilled in this approach to contrapuntal writing. As has been observed, this approach, with its emphasis upon the melodic, provided a good "balance" for Beethoven, whose

musical competencies at the keyboard and with figured bass tended to emphasize the harmonic. Even so, studies in Vienna with Haydn had not lessened Beethoven's appreciation for his more formative years of study in Bonn under Neefe. In 1793 Beethoven tells Neefe in a letter that he will have a share in his success should he become famous.

Prince Lichnowsky (1756–1814) was the first among many patrons Beethoven would have in Vienna. He subsidized the publication of Beethoven's three Trios op. 1. These trios were accordingly dedicated to the prince, as were the Piano Sonatas opp. 13 and 26, the Second Symphony, and a set of variations (WoO 69). From about 1793 to 1795, Beethoven lived at Lichnowsky's home, where many of his new works received their premiere during weekly concerts. Other patrons included Prince Franz Joseph Lobkowitz, Count Johann Georg Browne, Count Andreas Rasumovsky, Prince Ferdinand Johann Kinsky, the Countess Anna Maria Erdödy, and the Archduke Johann Joseph Rudolph.

Beethoven's extramusical passion for literature would become increasingly evident. Karl-Heinz Köhler observes that, within the surviving conversation books, Beethoven had taken note of 178 titles from the daily press. Some of these books, such as those dedicated to language or religion, would serve to further his general education. Others are said by Köhler to offer more general insights on the "practical exigencies of life, illness, and household organization." In addition to those that focused on musical development, there were texts on philosophy and the natural sciences, including the then fashionable subject of astronomy. Finally, he was drawn to notable works of world literature, especially those of Shakespeare, Goethe, and Schiller (Köhler 1980, 157).

The titles cited within these conversation books provide a measure of insight into Beethoven's interests and thinking, as do the underlined passages in some of the surviving poetry and prose books from his personal library. One finds in these examples an affirmed interest in ethical and social subjects, as well as subjects involving humanity, nature, and love. Such works were of more than passing interest to Beethoven. They inspired him to incorporate into his own life much of the contents within them. Thus one must count authors living

and long since deceased to be among Beethoven's important educational influences. Beethoven, in a letter to Wegeler (1801), says "Plutarch has shown me the path of resignation." This is in the context of informing Wegeler of his various health problems, not the least of which was his gradually worsening hearing condition. Perhaps it was indeed his exposure to Plutarch's writings that sustained him in the face of impending, total deafness.

In 1802, under medical advice, Beethoven took a six-month leave to Heiligenstadt, a small, quiet village outside Vienna. After a time there, he would realize the permanence, and ever-deteriorating condition, of his hearing. Many an author has been compelled to quote in full his most famous document, the so-called Heiligenstadt Testament, written October 6, 1802. Addressed to his brothers and, clearly enough, for posterity, the testament reflects Beethoven's inner turmoil over the likelihood of becoming completely deaf, if not terminally ill. For its immeasurable value in imparting something of Beethoven's interior world, it is quoted here in full:

For my brothers Carl and [Johann] Beethoven,

O you my fellow-men, who take me or denounce me for morose, crabbed, or misanthropical, how you do me wrong! you know not the secret cause of what seems thus to you. My heart and my disposition were from childhood up inclined to the tender feeling of goodwill, I was always minded to perform even great actions; but only consider that for six years past I have fallen into an incurable condition, aggravated by senseless physicians, year after year deceived in the hope of recovery, and in the end compelled to contemplate a lasting malady, the cure of which may take years or even prove impossible. Born with a fiery lively temperament, inclined even for the amusements of society, I was early forced to isolate myself, to lead a solitary life. If now and again I tried for once to give the go-by to all of this, O how rudely was I repulsed by the redoubled mournful experience of my defective hearing; but not yet could I bring myself to say to people 'Speak louder, shout, for I am deaf.' O how should I then bring myself to admit the weakness of a sense which I once possessed in the greatest perfection, a perfection such as few assuredly of my profession have yet pos-

sessed it in—O I cannot do it! forgive me then, if you see me shrink away when I would fain mingle among you. Double pain does my misfortune give me, in making me misunderstood. Recreation in human society, the more delicate passages of conversation, confidential outpourings, none of these are for me; all alone, almost only so much as the sheerest necessity demands can I bring myself to venture into society; I must live like an exile; if I venture into company a burning dread falls on me, the dreadful risk of letting my condition be perceived. So it was these last six months which I passed in the country, being ordered by my sensible physician to spare my hearing as much as possible. He fell in with what has now become almost my natural disposition, though sometimes, carried away by the craving for society, I let myself be misled into it; but what humiliation when someone stood by me and heard a flute in the distance, and I heard nothing, or when someone heard the herd-boy singing, and I again heard nothing. Such occurrences brought me nigh to despair, a little more and I had put an end to my own life—only it, my art, held me back. O it seemed to me impossible to quit the world until I had produced all I felt it in me to produce; and so I reprieved this wretched life—truly wretched, a body so sensitive that a change of any rapidity may alter my state from very good to very bad. Patience—that's the word, she it is I must take for my guide; I have done so—lasting I hope shall be my resolve to endure, till it please the inexorable Parcae to sever the thread. It may be things will go better, may be not; I am prepared—already in my twenty-eighth year forced—to turn philosopher: it is not easy, for an artist harder than for anyone. O God, Thou seest into my inward part, Thou art acquainted with it, Thou knowest that love to man and the inclination to beneficence dwell therein. O my fellow-men, when hereafter you read this, think that you have done me wrong; and the unfortunate, let him console himself by finding a companion in misfortune, who, despite all natural obstacles, has yet done everything in his power to take rank amongst good artists and good men.—You, my brothers Carl and . . . , as soon as I am dead, if Professor Schmidt is still alive, beg him in my name to describe my illness, and append this present document to his account in order that the

world may at least as far as possible be reconciled with me after my death.—At the same time I appoint you both heirs to my little fortune (if so it may be styled); divide it fairly, and agree and help one another; what you have done against me has been, you well know, long since forgiven. You, brother Carl, I especially thank for the attachment you have shown me in this latter time. My wish is that you may have a better life with fewer cares than I have had; exhort your children to virtue, that alone can give happiness—not money, I speak from experience; that it was which upheld me even in misery, to that and to my art my thanks are due, that I did not end my life by suicide.—Farewell, and love each other. I send thanks to all my friends, especially Prince Lichnowski and Professor Schmidt. I want Prince L's instruments to remain in the safe keeping of one of you, but don't let there be any strife between you about it; only whenever they can help you to something more useful, sell them by all means. How glad am I if even under the sod I can be of use to you—so may it prove! With joy I hasten to meet death face to face. If he come before I have had opportunity to unfold all my artistic capabilities, he will, despite my hard fate, yet come too soon, and I no doubt should wish him later; but even then I am content; does he not free me from a state of ceaseless suffering? Come when thou wilt, I shall face thee with courage. Farewell, and do not quite forget me in death, I have deserved it of you, who in my life had often thought for you, for your happiness; may it be yours!

Ludwig van Beethoven
(Grove 1896)

Despite its anguished tones, one finds in this document a resignation from which emerges an inner strength that would sustain him for the sake of his musical art. Perhaps Plutarch had indeed become the driving force behind his will to survive and to create. He had intimated as much in a letter to Wegeler just months prior to the writing of the Testament. Perhaps it was Beethoven's own difficult past that had served as preparation for the burdens he was now facing. The example of his friend Wegeler, whose determination enabled him to rise above family poverty to become a physician, might have played a role,

as had the inspired memory of the Breuning family and their social circle. Napoleon's heroic image was doubtless another source of inspiration, though this was short-lived as the hero would declare himself emperor. Though all of these are doubtless to be counted among the factors that motivated Beethoven, the most important factor was, as is indicated in the Testament itself, his art.

DETERMINING SUCCESSES IN THE ARTS

Beethoven is among the greatest musical figures of all time. Yet how does one know this? Can one assess in precise terms the value of Beethoven's musical contributions to the world, and, if this were possible, could there be consensus over the outcome or, moreover, the validity of such a determination? Indeed, evaluating successes in the arts can be especially problematic. On the evolution of Western art, Jacques Maritain, in his *Creative Intuition in Art and Poetry*, says that "the sense of the human Self and of human subjectivity enters a process of internalization, and passes from the *object* depicted to the *mode* with which the artist performs his work. Then occurs the outburst of individualism commonly pointed out apropos of the Renaissance, baroque art, and . . . classical art" (Maritain 1953, 23).

In fact, individualism in the arts, particularly since the sixteenth century, is responsible for the emergence of a variety of divergent schools. As the subjective in art is the single greatest factor in a creative work's originality, it alone can often determine a work's success or failure. Yet how does one address the inherent difficulties associated with its assessment, difficulties all the more pressing given that, on some level, its influence is always a key factor? While the subjective in art appears perhaps more relevant in the context of recent history, Maynard Solomon places in historical perspective the fact that an artist's "individual stamp" has always been observable (Solomon 1988, 102). Even so, however apparent an artwork's originality may appear to be, its wholesale appreciation necessarily remains fundamentally elusive to the outside observer, including those skilled and talented artists who attempt to assess each other's work. According to Maritain, "the individual factor in the mode of performing the work becomes so powerful that the greatest artists cannot actually understand each other's art" (Maritain

1953, 25). He goes on to say that “Michelangelo was singularly hard on Flemish painting, ‘which attempts to do so many things that it does none well,’ and El Greco said that Michelangelo ‘was a good man but did not know how to paint’” (p. 25).

Tensions between Haydn and his pupil Beethoven likewise arose from what Lockwood describes as “innate artistic differences” (Lockwood 2003, 85). Haydn’s “corrections” of Beethoven’s “errors” in species counterpoint exercises, for example, appear to have had little influence upon the latter’s musical style. In fact, on Beethoven’s work in counterpoint, Cooper says, “in some cases what was technically a ‘mistake’ in strict counterpoint (for example, sounding a suspension simultaneously with its resolution) became a characteristic feature of his style” (Cooper 1991, 78–79).

Beethoven also found Haydn’s word-painting in *The Creation* and in *The Seasons* to be somewhat superficial, and would later tell his pupil Ferdinand Ries that, from studies with Haydn, he “never learned anything.” Moreover, he refused Haydn’s wishes to have the words “pupil of Haydn” on the title page of his published works of the day (Cooper 1991, 79). Ries nevertheless recalls that Beethoven had indeed recognized “Haydn’s greater achievements, especially the many choral works and certain other things for which he properly lavished praise on Haydn” (Wegeler and Ries 1987, 68).

Thus we find instances in music where the subjective dimension in art can become an inadvertent force against peer appreciation. In the case of Haydn and Beethoven, the harsh or misinformed judgments each made of the other’s music is perhaps best understood from this standpoint. From DeNora’s perspective:

it would be unfair . . . to accuse Beethoven’s contemporary opponents of philistinism or musical ignorance or to argue that opposition to Beethoven consisted simply of conservative reactions. Equally unfair is attributing the failure of some of Beethoven’s contemporaries to appreciate his work to ‘psychological inhibitions.’ Similarly, it is fallacious to argue that the artistic steps Beethoven took were those of a giant, and that if his contemporaries were unable to perceive their inherent value it was because they were too small or lacked vision. To account for Beethoven’s talent in any of these ways is to hold a view that flatters the present-day viewer’s so-called more advanced

perspective; it also imposes our own aesthetic evaluative terms on a group for which they are not necessarily appropriate (DeNora 1995, 5).

That the “present-day viewer” may have neither the “more advanced perspective” nor the more informed aesthetic sensibilities underscores the imprecision associated with assessing musicianship and, in the case of Beethoven, genius. Moreover, though test taking may be important for certain prescribed purposes pertaining to the measurement of particular student strengths and weaknesses, current emphases upon educational assessment and its outcomes necessarily raises important questions, one of them being: Can emphases upon such measurements have precisely the opposite effect upon students from that which is intended, becoming, rather, a deterrent to learning? Put another way, can excessive test taking, and the stress that might be associated with it, compromise one’s desire to learn? One must consider why students are expected to attend class in the first place. Is it so that they can learn or be tested? Of course, an educator can ignore this either/or question with an appropriate balance between the two. However, with ever-increasing external mandates for testing, this becomes a growing difficulty. If educators are indeed compelled to place too great an emphasis upon the supposed outcomes of such tests, they might ignore the fact that there are limitations inherent in their standardization and preconception. As such tests are designed to measure specific and limited areas within preconceived academic parameters, they are of course wholly inadequate for gaining a more comprehensive appreciation of an individual’s abilities, particularly as they might pertain to artistic originality, talents, and, as in the case of Beethoven, emerging musical genius. The question of imposing a minimum standard for a given test likewise has implications potentially detrimental to human development and learning. Indeed, what do such measures predict in the real world, and if they are not intended to predict, what is their benefit? It seems certain, for example, that had Beethoven submitted to modern-day, standardized assessment tests in writing and arithmetic, he would have likely failed to demonstrate any measure of competency, to say nothing of proficiency. Moreover, it is likely that he would have learned what he himself and others already knew: that he was particularly deficient

in writing and arithmetic. Perhaps more importantly, from such test results, one could not anticipate much that would ultimately distinguish Beethoven in music. Indeed, statistical data based upon measurable, objectified standards leaves little room for ambiguity and thus would have been marginally informative if not irrelevant in such a case. Though Beethoven might well have benefited from being tested and receiving specialized training for his particular deficiencies, he might have paid a price for it. This is because such tests might have brought about excessive external pressures to succeed. Moreover, if a student receives poor test results, this can have a marginalizing or exclusionary effect. Perhaps one might conclude that Beethoven was fortunate to have had—with the exception of his early musical training—the opportunity to learn in his own way and at his own pace. Indeed, it was after the very strict and difficult music lessons of his boyhood, when he was assuming more responsibility for the family, that he would begin to flourish. Ultimately, it may be said that Beethoven's educational development, despite its inconsistencies, was impressive. In addition to realizing his genius in music, a genius he would share with the world, he had learned something about himself through the world around him and something about the world through having developed an appreciation for his place in it. This was a lifelong journey in large measure developed through his social interactions and intellectual interests in the classics and more contemporary literary, poetic, and philosophic works. Beethoven's musical and educational competencies were to be determined, of course, by means other than that of standardized testing and the like. Indeed, they were to be determined by those who had a share in his development of these competencies. These included friends, teachers, and patrons, all of whom assessed his musicianship in qualitative terms, drawing from their own educational backgrounds and experiences and from their knowledge of, and interactions with, Beethoven himself. Though Beethoven's father might have found better approaches to educating his son, for example, he knew enough about his own limitations on the one hand and his son's musical competencies on the other to recommend to him more advanced musicians for his training. Beethoven's grandfather, while little is known of him and less still of his relationship with his grandson, is yet another individual that must have somehow sensed a musical

potential in the very young boy, imparting perhaps much that would remain an inspiration for him.

CONCLUSION

The inherently complex, unpredictable, and exceptional nature of genius renders it inexplicable in solely educational, societal, or broader cultural and environmental terms. This perhaps explains in part the number of times Beethoven is said to have gained nothing from his various teachers. Recall that a former classmate had claimed Beethoven learned “absolutely nothing” in school and that, according to Wegeler, Neefe had “little if any influence on the musical instruction of young Ludwig.” Beethoven himself said he “never learned anything” from Haydn. Of course Beethoven had learned much from his various teachers and he was at least as grateful to them as he was to his friends and patrons the Breunings, Count Waldstein, and Prince Lichnowsky, among others—even if there were temporary ruptures of personal friendship. That Beethoven had learned a great deal from others along the way does not negate the fact that his music is uniquely his own. As with any great artist, Beethoven fully absorbed and assimilated his musical influences to develop and express his own musical voice, even if echoes of his musical thunder have their origins in Haydn and Mozart.

Despite Beethoven's lifelong difficulties in spelling and arithmetic—his nephew Karl attempting in vain yet again to impart to him multiplication operations, this time as he lay on his deathbed—and despite the fact that he was not the child prodigy that Mozart had been, his rare genius was to find masterful expression in music as he overcame, in an almost superhuman way, a particularly difficult set of life's hardships and challenges. Though the case of Beethoven's educational development is perhaps at the far end of a spectrum, educators in the arts might gain important insights from taking a closer look. Indeed, the art individuals create may be regarded as an important part of culture, both informing it and being informed by it. Thus the question of how one might stimulate and nurture the creative mind becomes important as well, as does that of the relationship between self and culture. Each informs the other in a process of shaping and being shaped, of being independent and interdepen-

dent. The question of how educators in the arts might focus upon ways to support the creative mind thus deserves our thoughtful consideration as art is not separate from culture and therefore neither is it separate from education.

Linda Ardito

SCIENCE EDUCATION

The struggles that are experienced today regarding the focus that should be taken in science classrooms resonate back through the history of American schooling. Since its first broad introduction into school curriculum, at the urging of scientists and the National Education Association in the late nineteenth century, what focus science education should take has been a subject of almost continuous debate with resultant swings in focus, approach, and intent over that time. These changes and debates about science education, the goals of science education, and preferred teaching methods have occurred as a result of changing political, economic, and social influences and pressure. In many countries, including the United States, science education has come to be seen as a way to counter problems such as a decline in international competitiveness, (perceived) weakness in military power, and increasing unemployment. Apart from these purposes, the necessity for science literacy has also been promoted from the perspective that it was a necessity so that individuals could best discharge their civic responsibilities (such as when voting) and for reasons of personal empowerment (through learning about concepts and practices which can influence their day-to-day decisions and activities).

Understandings of just what “science literacy” is have swung between various positions over the last century. At various times there has been a focus on the importance of understanding theories, claims, and hypotheses and how these came to be (essentially a “history” of science knowledge); at other times there has been a focus on the importance of students understanding and being able to replicate the practices of scientists (acting, in various ways, as little scientists themselves). Aligned with this shifting perspective is a swing between “teacher-centered” lessons

(where teachers guide all of the activities in the classroom; usually “cookbook” laboratory activities and lectures) and student-centered activities (in which students guide the questions and talk themselves through concepts and share with other students their emerging understandings).

Early in the twentieth century the role of science education was seen to be one of providing personal empowerment (as argued both by John Dewey and the National Education Association Committee of Ten as far back as 1893). Generally, children in biology learned about names of organisms, how they were classified, and what the parts of organisms were, as well as dealing with anatomy, physiology, health, hygiene, and sex education. Overall, biology (or “Nature Study”) dealt with what were considered important practical issues. This also explains why it was occasionally approached in various parts of the United States as agricultural science, particularly during the dust storms and droughts of the 1930s when students learned about soil erosion by wind and water, and how to avoid or lessen the effects of erosion with crop rotation and the planting of trees. In the other science subjects, however, physics and chemistry students concentrated on memorizing current theories and abstract models central to those disciplines and the curriculum in those subjects was often less concerned with practical (i.e., everyday) issues. During this time period pressure increased on textbook writers (who were the primary developers of curriculum) to make physics and chemistry curricula more relevant, practical, and applied. Overall, enrollment in chemistry and physics was often low (between 7 percent and 19 percent of students) with biology being a more popular subject. In part, this pressure explains the change through the 1940s and 1950s toward science curricula that were more focused on scientific processes and discovery, and less so on just knowledge and facts. The commercialization of science education also progressed through this time as more and more “lab kits” became available and more and more children learned science through the use of these kits. Although during this time many ideas were presented for improving science education, little actual headway was made and the same confusion about how to teach science which was present at the beginning of that century continued to prevail in the middle. The Second World War had, however, made it clear that those students who

were well versed in science, mathematics, and technology were key to developing a strong military and manufacturing base. With the shortages in personnel in these areas that became apparent after the war, science education gained increasing prominence in the postwar years.

The launching of Sputnik (the Russian man-in-space vessel) on October 4, 1957, is one example of an event that resulted in considerable change in science education. This launch by the Russians was taken as an indicator of the decrease of American innovation and creativity in relation to other nations and a decline in overall national competency in the sciences. Sputnik caused a resurgence of interest in science education as teaching science effectively was seen as a way to deal with a changing economy (which was becoming more technologically based) by improving the labor pool, improving recruitment to science careers, and winning the space race.

Despite the development of new curricula, often by scientists themselves, field testing of it was problematic. Whereas there was an increased interest in engaging students in laboratory activities or experiments in this curricula, teachers all too often integrated the laboratory activity into a lecture rather than performing the activity itself. Thus, despite the intentions of those who drafted the curriculum for students to engage in laboratory activities, students instead took turns reading from science textbooks and did not have the opportunity to experience science as a direct phenomenon.

The 1960s were characterized by tremendous progress in science and technology innovations, particularly with respect to products that impacted on the day-to-day lives of most people. New products in kitchens and households promising ease of use and improvement in everyday life were released and fired the imaginations of young people towards careers in science. "Better living through chemistry" became a catchphrase of the times, and television shows such as *Star Trek* presented science and the promises it held for the future as an exciting endeavor and therefore an interesting career for students to consider. Science curricula, through the efforts of scientists involved in their writing, evolved in the 1960s to a more demanding treatment of the subjects with few connections to the daily experiences of students or applications of the concepts. They instead dealt primarily with mechanical practices (such as calculations) deeply embedded with subject theory and models. Pedagogical approaches in-

cluded the incorporation of confirmatory laboratory activities (or "cookbook" labs) in which students engaged in experiments which confirmed the theories and models. Focused primarily on attracting the very brightest of students, science literacy was now considered to be important mostly for those high school students who were themselves going to become scientists.

Discussions of trends in science education throughout the 1970s are somewhat mixed. Some sources state that overall scientific literacy began to decline, and this was countered by incorporating more scientific "facts" into textbooks based on the ideological perspective that more content would fix the problem with science literacy. The consequence of this was that learning environments had a strong emphasis on memorization, with the result that student interest in science declined as students again became unable to see any personal relevance or application of science to their lives. Other sources suggest that the 1970s and early 1980s were characterized by an increase in a broader study of science incorporating concepts, processes, and values in a matrix which emphasized the importance of Science, Technology, and Society (STS) and student understanding of the relations between these from both a positive perspective (e.g., improved insulation for instance) and a negative one (such as nuclear waste) for society. These contradictory explanations of trends through the 1970s are perhaps explained by education being a state responsibility with curricula development and textbook choices occurring at the state level, and therefore approaches taken in one part of the country may well have been dissimilar to those used in other parts.

CONTEMPORARY ISSUES IN SCIENCE EDUCATION

In the early 1980s various reports called for a continued adoption of science curricula which focused on students' individual needs and on improved understanding of the STS issues mentioned earlier so that they could make better decisions about science-related social issues. However, as a consequence of the 1983 report *A Nation at Risk: The Imperative for Educational Reform* (National Commission on Excellence in Education), which reported that American high school graduates and citizens had only a minimal understanding of science (as indicated by international test scores), standards were raised and a new era of

accountability began. There is, however, little evidence that this effort has led to improved science literacy in the United States despite considerable funds and efforts (both in research and in pedagogical changes).

As the 1980s progressed into the 1990s a perspective on learning called “constructivism” was adopted by many science education researchers and was integrated with the concept of “authenticity” into their education of science teachers. Although there are many variants on constructivism, at its simplest it means that individuals construct meaning by integrating new experiences and understandings of concepts into past experiences and previous understandings of concepts. This view is in opposition to the *Tabula Rasa* (or “blank slate”) model, implicit in approaches to learning in the preceding decades, which suggested that students could essentially have new ideas (such as science concepts or practices) transferred into their heads and retain the knowledge distinct from any other experiences without these prior experiences influencing the student understanding of the transferred concept. In essence, constructivism brought to the fore the idea that prior individual experiences and context were important factors to consider when trying to develop classroom environments from which students could learn science content and practices. The idea of authenticity in science classes builds on this idea of constructivism and the importance of experiential context, as does the considerable number of insights into the practices of scientists themselves as documented in a disciplinary area known as sociology of science. From this perspective of authenticity, students’ understanding of science concepts will best occur if they have engaged in science classroom practices which mirror those engaged in by scientists themselves when understandings of those concepts developed. Thus, the idea that students would best learn about science concepts by participating in self-directed, open-inquiry (meaning that the outcomes were [potentially] unknown) activities began to be promoted in faculties of education and in textbooks on science education. Over the past decade ideas of authenticity have changed from experiencing the local practices of scientists (i.e., individual investigations), to an understanding that the long-term nature of their activities and distributed nature of their community practices are also relevant to the learning. Thus, current science education practices are beginning to promote

the idea that students will best develop understanding of science concepts by participating in long-term, community-based activities where students participate both in networks of students as well as networks of other individuals with interests in the activities. One outcome from this approach to having students learn science is that they learn that science knowledge is dynamic and evolves and changes over time, as opposed to learning outcomes from traditional approaches to science education which implicitly result in students learning that science facts are static and have been irrevocably proven. There is some evidence that this latter perspective, that what is known is known, coupled with the confirmatory nature of traditional laboratory activities, leads to a disinterest in students pursuing science as a career (after all, if most things are “known,” why would someone be interested in becoming a scientist?).

During this time other issues have entered into discussions of science education, including multicultural representations of science (following a developing understanding that other cultures interpret observed phenomena in different ways than the Eurocentric approach characterized in Western science), the lack of females participating in the sciences (with resultant programs to encourage more females to choose science as a career), and environmental issues.

This latter issue, first gaining educational prominence in the mid-1970s, has led to what is called STSE (Science, Technology, Society, and the Environment) education; building on STS education. This STSE perspective would encourage, for instance, students to develop an orientation toward genetically modified foods that was not one of just blind acceptance of what they were told by the biotechnology companies but one which instead took a more critical stance toward impacts of the technology on the environment.

Despite these changes over more than a century, textbooks have remained remarkably similar over that time. Although today’s science textbooks unsurprisingly contain information on more current science theories and practices, they are also remarkably consistent in presenting some content that is quite similar to textbooks from a century ago. For instance, cross-sectional diagrams of flowers (such as the tulip), seeds (such as the dicotyledonous beans and the monocots such as corn), and systems of lenses (for refraction and reflection) remain present in textbooks today in much the same way

as they did in textbooks a century ago (although today often in color, and presented with fewer labels and less detail than those earlier sources).

However, one notable change that has occurred in textbooks is the increased depiction of both females and visible ethnic minorities and their participation in science activities and in science as a career. In the 1940s and 1950s female students were infrequently depicted in textbooks, and the representations that were there showed male students performing lab activities while female students stood by and watched them setting up the equipment and doing the experiments. Although there are still arguments that biases exist, current textbooks are much more likely to depict a more balanced representation of both males and females and students from various ethnic backgrounds engaged in activities and showcase interviews with scientists from more diverse personal backgrounds. These, and other efforts, have led to a far higher participation rate of females and minorities in the sciences, although they are still underrepresented in chemistry and physics overall and in all disciplines at higher academic levels.

CHALLENGES FACING SCIENCE EDUCATION

Despite the amount of research conducted into science education in the United States, and the evolving perspectives on science education that have come into vogue since the 1980s, there is little evidence that much has changed in the classroom practices enacted by teachers. Many science classrooms continue to closely resemble those of the 1950s and earlier, dominated by theory and cookbook laboratory activities and often are lecture-based with the students copying notes and filling in worksheets. Even though considerable research conducted in the last twenty years has led to a deepening understanding of which educational practices will lead to improved science learning outcomes, there is little evidence that science education practices have changed at the classroom level in response. Although there are many reasons for this, a large influence is a political agenda that promotes standardized (i.e., multiple-choice) testing to determine science knowledge. Many teachers feel that lectures, worksheets, and textbook readings are the best preparation for these tests, and as a result their pedagogical practices have not evolved even though there is, in many research circles,

broad recognition that these tests are not very effective indicators of what students understand about science and its practices. Americans remain concerned that more reform efforts are needed and that the country continues to lag behind in preparing a workforce and a populace which are ready to cope effectively with decisions in a society where science and technology issues continue to be significant influences. A current contradiction, and one which may continue to remain unresolved, is that the public perception of what changes need to occur in the teaching of science to improve science literacy run counter to many of the findings of science education researchers regarding what approaches to the teaching of science actually improve science literacy. Until this contradiction is resolved, there is little possibility for an improvement in broad cultural scientific literacy in the United States.

G. Michael Bowen

HISTORY/SOCIAL STUDIES EDUCATION

Looking at the title of this entry a reader might assume that there is no significant difference between history and social studies education. Given that there is a political battle being waged between the two for prominence in the school curriculum, that assumption would be incorrect. We therefore need to define both history education and social studies education by looking at the goals of each academic approach, tracing their origins in the curriculum, and understanding why there is such controversy about which approach is better for America's students.

DEFINING THE TERMS

Merriam-Webster Online Dictionary defines history as "1. A tale or a story, 2. A chronological record of significant events (as affecting a nation or institution) often including an explanation of their causes; [and] 3. A branch of knowledge that records and explains past events."

This source cites the etymology of the word as from the "Latin *historia*, from Greek, inquiry, history, from *histOr*, *istOr* knowing, learned; akin to

Greek *eidenai*, ‘to know.’” These definitions do not speak of a purpose for knowing beyond explaining past events; simply knowing the past appears to be enough reason to study it.

In a section titled “The Significance of History for the Educated Citizen,” the National Center for History in the Schools (1994) explains why history should have a prominent place in the curriculum. These reasons include the importance that a society shares a common memory “of where it has been, of what its core values are, [and] of what decisions of the past account for present circumstances.” The conclusion to this section relates that without studying history, a person cannot make any sensible inquiry into the political, social, or moral issues in society. Therefore, without historical knowledge and the inquiry it supports, the informed, discriminating citizenship essential to effective participation in the democratic processes of governance and the fulfillment of the nation’s democratic ideals cannot be achieved.

If we were to continue reading the introductory materials describing the study of history in the National History Standards published by the National Center for History in the schools (National Council for History Education [n.d.] mission statement), we would find that a study of history requires the development of both historical thinking and historical understanding. Historical thinking includes reasoning that “must be grounded in the careful gathering, weighing and sifting of factual information such as names, dates, places, ideas, and events,” while historical understanding “requires students to think through cause-and-effect relationships to reach sound historical interpretations, and to conduct historical inquiries and research leading to the knowledge on which informed decisions in contemporary life can be based.” These definitions then provide a purpose for history education that is two-fold: to form common bonds in our society and to use our understanding of history to help us fulfill the obligations of citizens in our daily lives. This moves beyond accumulating past data to using it in our contemporary lives.

How does this differ from social studies? Part of the answer is that history is sometimes defined as part of the humanities (records of humankind), as opposed to a social science (a problems-solving approach). Part of the answer lies in divisions within the field of history about what is appropriate for stu-

dents to study. Is history simply knowing what happened and when it happened? Or is it knowing why it happened, how it happened, and what that means today? Further, if it is the latter, is there agreement on the why, the how, and the meaning? But what of social studies?

The Merriam-Webster Online Dictionary defines social studies as a part of a school or college curriculum concerned with the study of social relationships and the functioning of society and usually made up of courses in history, government, economics, civics, sociology, geography, and anthropology. The thrust here is interdisciplinary education to understand how a society functions.

The definition from a professional organization, the National Council for the Social Studies (NCSS 1994b), reads slightly different. They state that social studies is

the integrated study of the social sciences and humanities to promote civic competence. Within the school program, social studies provides coordinated, systematic study drawing upon such disciplines as anthropology, archaeology, economics, geography, history, law, philosophy, political science, psychology, religion, and sociology, as well as appropriate content from the humanities, mathematics, and natural sciences. In essence, social studies promote knowledge of and involvement in civic affairs. And because civic issues—such as health care, crime, and foreign policy—are multidisciplinary in nature, understanding these issues and developing resolutions to them require multidisciplinary education. These characteristics are the key defining aspects of social studies. (National Council for Social Studies 1994b)

More concisely, NCSS states on its home page (www.socialstudies.org) that “social studies teaches the content knowledge, intellectual skills, and civic values necessary for fulfilling the duties of citizenship in a participatory democracy.” The focus is on students developing the knowledge, skills, and attitudes to perform the duties of citizenship in our republic. Aside from the integration of many more academic disciplines, are these definitions and goals really different? Looking at the history of these school subjects might provide part of the answer.

THE HISTORY OF HISTORY AND SOCIAL STUDIES

In 1892, a Committee of Ten was appointed by the National Education Association (NEA) to address education in the United States and to recommend a curriculum of study for the nation's schools. The committee broke into subgroups with a specific subcommittee on History, Civil Government, and Political Economy. There was an additional subcommittee on geography that made separate recommendations. Before the report was issued many schools taught a survey course in high school frequently called "general history." That course was labeled by the committee as having too many facts and too much memorization. Thus, as history became a formal part of the curriculum, the committee recommended a format of eight years of study in grammar school and four years of study in high school. The general history survey (a Western civilization and American history approach) was to be replaced by four year-long courses including ancient history, medieval and modern European history, British history, and United States history. Political economy was judged too difficult for the high school level. Geography was to be taught as a separate subject, although the committee did recommend the study of maps as part of the history curriculum.

Prior to 1890, history was taught as a "celebratory" history from the political and military tradition, based on the consensus that there were no deep conflicts in our society. That means that history was taught to increase American patriotism by celebrating the political and military conquests of the nation. The curriculum did not include serious explorations of race including slavery, poverty, or immigration. Where minorities were mentioned, the consensus was that African Americans were better off as slaves than they had been in Africa. World history meant the spread of white, male European civilizations over the "lesser" peoples of the world. What is most interesting about the Committee of Ten recommendation for history was a slight change in the teaching approach.

The committee suggested that teachers and students move away from simple memorization of facts and dates and toward interpretation of primary source documents, maps, and other historical materials. Recommended teaching methods included a topical ap-

proach (as opposed to chronological approach), debates, and visits to museums and historical sites. This was not supposed to be a curriculum focused toward just the college-bound but for every student completing formal education at the high school level. While the recommendations of the committee were strong, the reality is that history in the schools remained mostly celebratory memorization, and historical thinking and understanding (modern terms) were not introduced into the public schools. History remained dry, boring, and irrelevant to the majority of students. It should be noted that the turn of the twentieth century was a time of great upheaval in America with large numbers of immigrants pouring into our rapidly industrializing and urbanizing nation. Thus the history being taught seemed far removed from the concerns of these students. Additionally, the discipline of history was undergoing change.

There was a new generation of scholars attending to more than the traditional political and military approach to the study of history. Topics such as slavery, immigration, and labor history were beginning to take root. Charles Beard published his groundbreaking *Economic Interpretation of the Constitution* (1913) that focused on different document sources and drew different conclusions than traditional constitutional studies. Some might say that as this new history developed it subsumed many of the social sciences as scholars began to approach the study of history from not only political and military perspectives but added economic, social, religious, intellectual, and aesthetic considerations. Additionally, voices of those usually ignored by historians began to be explored. Conflict within the field of history over the legitimacy of including so many divergent viewpoints of events raged within the field. Who had ever heard of considering how Native Americans felt about the conquest of the West? Or how the Mexicans viewed the annexation of Texas?

Thus in 1921 when the National Council for the Social Studies was founded, originally as a branch of the American Historical Association, another committee was appointed and another curriculum was suggested. This new curriculum, a social studies curriculum, owes much of its approach to the progressive movement and the educational philosophy of John Dewey. This would be an interdisciplinary approach with a focus on problem solving using scientific method. History would be studied equally with

other social sciences in the context of the problem or topic being discussed in class. So, in the short term, schools adopted the four-year approach but it was short lived, and soon the world history survey course reappeared to make room in the curriculum for other social studies topics and courses deemed more relevant to the students in the schools.

This new curriculum became less history focused and more “life adjustment” focused. There was the introduction of courses titled “Problems of Democracy,” a current events approach. For traditionalists, this implied that there might be problems in America and it was unpatriotic to suggest to students in their formative high school years that there might be something not perfect in America. Thus in addition to the split among historians about what to teach, the rise of social studies sought to address concerns not previously covered in school: the Great Depression, the growing gap between the rich and the poor, racism, and the lack of civil rights for a significant number of citizens. It was obvious to many, including a major figure in the social studies, Harold Rugg, that students should be focused on solving these economic and social problems (Riley 2001).

Alongside the progressives, another smaller group, the social reconstructionists, believed that schools should teach active citizenship as a way of solving problems existing in our country. Writers like George Counts asked, “Dare the Schools Build a New Social Order?” (Riley 2001) Rugg then produced a series of textbooks that, while fully supporting our democracy, challenged students to explore topics such as the gap between the rich and the poor, urban problems, and world (not simply Western) culture and minorities. Rugg believed that as students encountered these problems they would strive to make America even more democratic. The backlash from traditional American patriots, for example, the American Legion and the National Association of Manufacturers, who were furious that anyone might think that America needed improving, was immediate and fierce. Rugg’s books, the best selling social studies texts of their time (1940s), were targeted in a smear campaign and removed from the schools. With the end of the Depression and the rise of the Cold War, history/social studies education reverted to its original format.

It is also true that in many schools the suggested course of study for four years of world (Western)

history, U.S. history, and geography all but disappeared; though many two-year history programs generally remained. And those two year programs remained in traditional, textbook driven, memorization formats despite calls for a more vibrant, living history by all history/social studies professionals. This call for improvement in either the social studies or the history curriculum seemed to pass teachers by. Students continued to memorize facts and dates, to study military campaigns, and to move from era to era without any depth of understanding of how we came to be who we are. Textbooks then responded to the threat of the Cold War and McCarthyism, and modern history became the study of “us versus them.” The celebratory history triumphed as any suggestion that there were inequity and racism in American society was glossed over.

Despite the rise of the “new social studies” in the late 1960s and early 1970s, which tried to focus students on learning the way historians learn, using the tools of the discipline by studying documentary evidence, looking in depth at local history and problems sometimes called “post-holing” (as opposed to survey courses) and the emergence of minicourses like Black history or women’s history, very little changed in the teacher’s approach or the students’ experience. History/social studies was still about textbooks and the memorization of huge numbers of facts and dates.

Then in 1983 came the publication of the Carnegie Commission’s famous report *A Nation at Risk*. The call was for reforming the curriculum to go “back to the basics,” which meant more history/social studies including world history (not simply Western civilization), geography, U.S. history, economics, and government (civics and American government) (National Commission on Excellence in Education 1983). As a result of this call and a subsequent call to improve school curriculum commonly known as Goals 2000, the call for national standards for history/social studies was made and the current battle for the curriculum was joined.

HISTORY VERSUS SOCIAL STUDIES

The result of the invitation to create national standards resulted in a glut of standards in the history/social studies category. There are NCSS social studies standards, “*Expectations of Excellence*” (1994b), that contain ten broad themes:

1. Culture
2. Time, Continuity, and Change
3. People, Places, and Environments
4. Individual Development and Identity
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
7. Production, Distribution, and Consumption
8. Science, Technology, and Society
9. Global Connections
10. Civic Ideals and Practices

These themes are interdisciplinary and are guides to enable teachers to meet the mission of NCSS to prepare effective citizens. The historians were invited but chose not to join in the process of developing the social studies standards. Instead, the historians met separately, did not invite NCSS, and developed their own standards. The feeling became that there must be a choice—one or the other—however, that is not really true.

In the view of NCSS, these social studies themes work in concert with the more specific content standards developed by the individual disciples of history, economics, geography, and government/civics. Phipps and Adler (2003) explain the co-necessity of the single subject standards operating within the larger context of the social studies standards and a way to ensure that the factual base and major concepts of the disciplines are included in social studies classrooms. This interweaving of standards is backed by numerous examples of successful, content rich lesson plans in professional journals for teachers like *Social Studies* and *Social Education*, and on the Internet. The content and primary sources available to teachers and students overshadow anything previously imaginable and provide easy ways to remove social studies from lecture, textbooks and worksheet strategies, and into the real world. These examples do not shy away from the controversial issues and problems that intrigue our students and could help transform them into active, caring citizens.

Many teachers are content with lectures, textbooks, and worksheets and do not use these resources, however. In addition, the implementation of high stakes testing required by many states and by the *No Child Left Behind Act* (although social studies is exempt from this federal law at this time), and fact-based, multiple-choice tests only reinforce

traditionally unsuccessful teaching strategies. There is nothing wrong with high standards. The question is the content of those standards and the kinds of assessments and evaluations that accompany them.

The media has been full of articles and discussions defending a single subject history, government, geography, and economics approach over an interdisciplinary social studies approach. Is there any merit to the argument? In reading the literature and newspaper discussions the real problem lies in unstated assumptions.

First, neither approach is inherently rigorous. Rigor, in the final analysis, has more to do with what the individual teacher requires of students than the subject matter of the course. And, if history has subsumed social studies by adopting multiple perspectives beyond celebration of our past, then the real issue is for history advocates to stop arguing with social studies advocates and to work together to provide these challenging lessons for students in classrooms. In many ways this fits with the topical approach suggested by the Committee of Ten in the 1890s before the field of social studies existed! However, social studies had become politically unpopular to a large number of leaders in our nation and the attack began.

Many historians believe that social studies is watered-down and meaningless and that only the study of history provides rigor and training in critical thinking and problem solving that students need to become productive members of society. Several prominent leaders and foundations have jumped on the history bandwagon to lead this attack. However, they never actually define rigor beyond stating that history has it and social studies does not. Despite recent headlines that might indicate the opposite, it is nothing new that America's school children seem deficient in basic content knowledge regarding United States history, world history, geography, government, and economics.

Students are now regularly given a seemingly unending series of high-stakes, multiple-choice tests ranging from the NAEP (National Assessment of Educational Progress), the CTBS (Comprehensive Test of Basic Skills) and individual state tests where required. The underlying assumption is that the inability to perform well on these tests is correlated with the goal of creating active, informed citizens who understand their past and how it relates to the present

and the future. They also assume the reverse: that increasing performance on these tests will enhance the attainment of this mission. But there are no data to back up these assertions.

With that in mind, what exactly is the pro-history, anti-social studies solution being promoted? A careful reading of the current agenda (see the Fordham Foundation Report *Where Did Social Studies Go Wrong* [Frazee and Syers 2003]) yields a much deeper and more serious split between history and social studies. According to Rochester (2003) in “The Training of Idiots: Civics Education in America’s Schools” from the Fordham Foundation report, the solution consists of the right balance of civic information and civic interest. This list of six principles includes:

1) The importance of studying American history—“*their* history [italics original]—in its own right and not merely as part of some ‘integrated’ world history and, that this be a ‘more accurate rendering . . .’ (p. 27). The question of ‘accurate to whom’ is explained as less study of ordinary people and minorities and more focus on the accomplishments of traditional heroes such as Washington and Jefferson. This contradicts many social historians who believe that if all that is studied is the founding fathers, without the context and understanding, the ordinary colonial American and his/her life, for example, then we cannot understand the American Revolution at all.

2) We should be more laudatory about the “extraordinary achievements of the American political system . . .” (p. 27). While Rochester does state that we should “acknowledge a racist, sexist past that still lingers to some extent” (p. 27) he cites Havel saying that we really can’t do too much better because ‘people are people’ and democracy will always be an ideal. Thus, we should downplay any negatives and focus on how great we really are. For our students in inner cities, rural areas, or from immigrant homes facing anti-immigrant expressions, this is problematic and actually causes them to feel betrayed by the study of history.

3) “We need to stress the importance of starting with a common base of factual information about the American historical and contemporary experience” (p. 27). Note that there is no discussion about the tentative nature of factual knowledge or multiple perspec-

tives in relation to what constitutes factual knowledge. This entry, and the Fordham report as a whole, assumes an agreed upon factual base for American history and government that many historians (in addition to social scientists) find problematic.

4) A need to cultivate teachers who are not only passionate about children but about their subject matter. This section continues stating, “process is no substitute for content” (p. 28). In an earlier section of this chapter the criticism focuses on learner-centered approaches and society-centered approaches (defined as focusing on problem solving) as inadequate compared to knowledge-centered approaches to teaching. Knowledge-centered appears to be synonymous with teacher-centered to this author. “Teaching about politics is more likely to come alive with a serious, captivating lecture than with fun and games” (p. 28). There does not seem to be an in-between teaching strategy that might interest students and seem relevant to their lives.

5) “We need to engage students in the right ways” (p. 28). This short paragraph focuses on what the author deems acceptable service learning, for example, going to the polls on Election Day with their parents for “Kids Voting.” There is no discussion of what to do about parents who do not vote, or vote when children are otherwise occupied with school, and so forth. Nor is there a mention of what experts in service learning define as effective service learning, which is vastly more complex than watching parents vote.

6) “We need to create fewer doubters and cynics” (p. 28). The statement here is that our system works, albeit imperfectly, and that promoting “intellectual and moral relativism” is a mistake. We need, says Rochester, to give “children the strong grounding in knowledge and values that will hopefully result in a greater sense of political efficacy.” Thus, the intellectual truth and moral truth are given, which will create more political value. That might be efficient, but it assumes only one viewpoint in an increasingly diverse society. Isn’t democracy based on the fact that the truth is not a “given,” but that discussion and compromise over serious intellectual and moral disagreement is how we best demonstrate our democratic values?

Part of the problem between history and social studies ultimately centers on teacher understanding of

the subjects being taught and the political nature of history/social studies as a school subject. Teachers need deep content knowledge and understanding of the major concepts of the individual disciplines that combine to create interdisciplinary social studies. Clearly that might be more difficult to master with a multidisciplinary major (social sciences) than a single subject major (history). A case could be made that that is the reason Dewey, and progressive education in general, are so frequently misunderstood. A highly qualified teacher who takes a truly interdisciplinary approach to education requires a range of intellectual interests and knowledge—almost as we would define a Renaissance person. The culprit here is the need for more intellectual teachers—something our society does not reward with either money or respect. Students do need content knowledge to integrate into their problem solving. To some extent, the issue is over who determines the factual content needed and the problems outlined for solutions in the curriculum.

For those promulgating a history approach in the public press, the factual content is not an area of contention. What is stated in the Fordham report is the real agenda: to “stress the continuing centrality of the West; include other cultures but honestly—warts and all, East and West; note the contradictions of the global education ideology; stress the superficiality, inaccuracy, and blandness of ‘world cultures’ and ‘world history’ materials; [and] encourage stronger narrative history with a focus on moral and political action” (65–66). Thus it isn’t just more history that is needed, it is more of a particular approach to history with a particular purpose in mind.

The problem is that Americans do not all have the same vision for our students. We all want active, concerned citizens but that does not necessarily mean the same thing to all parties. The Fordham report makes clear that what social studies educators advocate as critical thinking and problem solving through interdisciplinary learning, the history advocates are tarnishing because they do not envision the same curricular goals by definition. While one group is trumpeting “E Pluribus Unum” (out of many, one) others ask, “Who’s Unum?” In other words, who will decide what the definition of “one” will be in terms of values, beliefs, and practices?

This problem of unum becomes very clear when reading the chapter from the Fordham report titled,

“Multiculturalism and Social Studies” (Ellington and Eaton 2003). The NCSS vision of preparing students to live in a diverse America with a multiplicity of perspectives is not the goal of the Fordham Foundation. It is clear that their definition of history means their view of history: Western-based, celebratory history, fact-based, and with primary source documents heavily packaged as everyone’s unified vision and understanding.

But in reality there is diversity in our classroom. We have nonreaders, homeless children, children in poverty, and those without proper health care. How does this celebratory version of history help them attain the tools needed to become productive members of society and active citizens improving the lives of all Americans? I do not believe that social studies professionals and teacher educators accept the view of the Fordham Foundation when faced with this reality. However, I do believe that many practicing social studies teachers do accept that view and still their students fare poorly on standardized tests that are fact-based and traditional.

Thus, the real threat is that social studies teachers will do less in the way of enforcing a unified view of history as defined by the political right. In the end, this is a question of philosophy and values. What is the vision of America and the world that students should have as they attend school, graduate, and enter the real world of the twenty-first century? Which approach is better suited to achieving that vision? There is a deep divide in America and one place it is surfacing is in the battle between history and social studies education.

Barbara Slater Stern

VISUAL ARTS

The term “visual arts” is an academic heading that gained prominence in England in the eighteenth century. In this heading the word visual is an adjective used to highlight this category of the arts and distinguish this subset from other art forms of the time. The visual arts are generally thought of as the fine arts, along with dance, music, and theatre. Refining these distinctions further still are three headings offered in 1999 by John Keefe, MA, Principal

Curator of Decorative Arts, New Orleans Museum of Art, listed under fine arts in the World Book *Multimedia Encyclopedia*: visual (fine and decorative); auditory (music, opera, and drama); and performing (music, dance, film and theatre arts). Today, in settings where the arts co-exist, distinctions are made most often in educational environments and in funding categories.

The term “fine arts” is associated with the *École des Beaux-Arts* and more specifically The Académie Royale de Peinture et de Sculpture in seventeenth century France. According to *The Oxford Dictionary of Art*, Charles Batteaux’s work *Les Beaux Arts réduit à un même principe* contained categorizations for the fine arts that were as follows: “useful arts, the beautiful arts (sculpture, painting, music, poetry), and utility (architecture, eloquence).” The philosopher D’Alembert also listed the fine arts as “painting, sculpture, architecture, poetry, and music” in Diderot’s *Encyclopédie* (1965). In England this list was recognized but sometimes also referred to as the “five arts,” *The Oxford Dictionary of Art* continues. The visual fine arts were also defined as drawing, painting, and sculpture in England. Sir Joshua Reynolds, acting as the first president of the Royal Academy of Arts in London, encouraged awareness of the visual arts to the public. Sir Joshua Reynolds’s fifteen *Discourses on Art*, the quintessential text, published in English, outlined the Academy’s ideals. Membership to the Royal Academy elevated the status of the professional artist and entitled the member to use the Royal Academician initials of “RA” and Associate “ARA” after their names respectively (Clarke 2001). Three centuries earlier, the Renaissance scholar Leon Battista Alberti celebrated the discipline of painting for the beginner by writing about this “subtle art” in *On Painting* (1991). Sculpture and the performing arts were considered branches of the arts as well during this period in Italy. Leonardo da Vinci paved the way for future artists when he broke the cycle for church-appointed painters to allow for a period of reflection during the creative process, raising the level of recognition for the visual arts from an applied art to a fine art. He is considered to be a pivotal visual artist who coupled the concept of ideas with practice.

In medieval times the fine arts were defined as arithmetic, astronomy, dialectic (logical reasoning), geometry, grammar, music, and rhetoric. These seven areas or branches of learning were also known as the

liberal arts. Today we find the vestiges of these origins in academic terminology such as “arts degree.”

The visual arts include a wide range of media that have developed from academic classifications to today’s diverse and complex categorizations. Popular culture along with academic fields of study have divided or categorized the arts to be performing or visual. The term “arts” generally is associated with the “fine” arts and not usually the “applied or decorative” arts, although at times these boundaries are blurred.

In America, the visual arts are first seen in the works of Native Americans who produced carvings, rock paintings, and weavings as a means to express their tribal culture. Throughout the colonization of America these earlier works bore little notice, but as the nation developed a recognition of regional folk art emerged. László Moholy-Nagy, a student of law and an artist, began his teaching career by first working with Walter Gropius at the Bauhaus and then directing, from 1937 to 1938, the short-lived existence of the Bauhaus School of Design in Chicago. He founded the Chicago Institute of Design, where he remained until his death in 1946. In his book *Vision in Motion* (1961), Moholy-Nagy describes the economic factors that governed a resource-rich country like the United States, along with how these conditions demanded a different approach to the art of design than existed in Europe. He raised awareness of the principles of basic design and influenced commercial and industrial design development in the United States placing them in prominence alongside academic art.

Traditional categories for the visual arts along with highlighted artists working in these media are: Drawing (Leonardo da Vinci, Sol Lewitt); Painting (Jennifer Bartlett, Artemisia Gentileschi, Wassily Kandinsky, Jacob Lawrence, Edouard Manet, Alice Neel, Jackson Pollack, Georges Seurat, Jan Vermeer); Sculpture: open, closed, soft-art, fixed, time-based, virtual (Alice Aycock, Louise Bourgeois, Marcel Duchamp, Alberto Giacometti, Henry Moore, Fukami Nakamura, Claes Oldenburg, Rick Paul, Martin Puryear, David Smith); and Architecture: traditional, theoretical design, landscape design, earthworks (Antonio Gaudí, Rem Koolhaas, Maya Lin, Robert Smithson, Frank Lloyd Wright). From these traditional categories the visual arts evolve to include in alphabetical order: Animation/Storytelling (Chris Van Allsburg); Artists’ Books and Paper Engineering (Robert Sabuda, Keith Smith,

Mary Stewart); Appropriation (Jeff Koons, Sherrie Levine); Collage (Romare Bearden, Georges Braque); Computer Graphics and Visual Communications (Bonnie Mitchell); Conceptual Art (Joseph Kosuth) Craft (ceramics, fiber, glass) (Judy Chicago, Dale Chihuly, Michael James, David Mac Donald,); Film (Alfred Hitchcock, Cindy Sherman, John Waters); Folk Art (Cultural); Graphic Design (Ken Botnick, Andy Warhol); Illustration (Leonardo da Vinci, Michael Mastermaker); Jewelry (Cultural); Mosaic (Cultural); Mural (Diego Rivera); Naïve (Henri Rousseau), Narrative: graffiti, installation, text, and image (Jean-Michel Basquiat, Keith Haring, Jenny Holzer, Barbara Kruger, Duane Michals); Performance (Vito Acconci, Laurie Anderson, Gilbert and George, Robert Wilson); Photography (Ansel Adams, Eadweard Muybridge, Cindy Sherman, Alfred Steiglitz, Edward Weston,); Printmaking (Albrecht Dürer, Katsushika Hokusai, Lisa Mackie); Site-specific Installation (Christo & Jeanne-Claude, Robert Irwin); Video (Nam Jun Paik, Bill Viola). Within these categories there exists hybrid combinations that support interdisciplinary platforms primarily seen in the additional categories of Installation, Performance Art, and the Visual Book.

The role of the visual arts in the history of American education has maintained a presence while experiencing a shift from earlier practices that mimicked academic mastery of a specific medium to discovery of self through the arts. In John Dewey's *Art as Experience* (1934), we are presented with the duality of art as experience and art as a language. The author points out that a work of art is not only viewed as an historical marker, indicating a period in history or a specific artist's progression, it also contains a resilience or everlasting quality that comes from the experience it provides the viewer each time the work is processed. He goes on to say that "because objects of art are expressive, they are a language. Rather they are many languages. For each art has its own medium and that medium is especially fitted for one kind of communication. Each medium says something that cannot be uttered as well and as completely in any other tongue."

In *Focus on Fine Arts: Visual Arts* (1989) by Don L. Brigham, the author cites two references to seeing patterns and making connections. Brigham first states, "the inability of students and teachers to draw connections among disciplines has resulted in a fragmen-

tation of learning." Secondly he refers to a 1989 statement by Ernest Boyer, then President of the Carnegie Foundation for the Advancement of Teaching, about "the role arts education may play in overcoming departmentalization of learning. . . . After visiting colleges and schools, I am convinced that students at all levels need to see connections . . . finding patterns across separate disciplines can be accomplished through the arts . . . the arts gives us a language that cuts across the disciplines, helps us to see connections and bring a more coherent meaning to our world." Brigham goes on to highlight what we already know from past practice, that visual arts education focuses on the student as an individual, enabling them to communicate on many levels. As he describes it, "one of the outcomes of the visual literacy movement in the 1970s was the introduction of filmmaking as part of many curricula . . . for students who had previously considered dropping out of school." This example demonstrates how the film medium transformed from visual aid to visual art in the service of education. Film and video provide an accessible medium of expression for students lacking any combination of communication skills. Successfully expressing ideas and emotion can lead to the building of confidence and the discovery of knowledge. Learning the language of the visual arts is symbolic and great emphasis is placed on a national standard for visual arts education. For the "curriculum studio" in visual arts, three levels or divisions correspond to a student's K–12 educational level. The visual art areas are described as drawing, painting, sculpture, design, architecture, film, video, and folk arts. The national standards for visual art education as put forth by the U.S. Department of Education contain learning objectives that are as follows:

1. In primary settings, K through grade four, the introduction and use of art materials and media are stressed along with exploring methods for effective communication. Developing observational skills that eventually will allow for the ability to "describe, interpret, evaluate and respond to work in the visual arts are also a goal."
2. In grades five through eight, "Visual expressions become more individual and imaginative." Attention is on problem solving as it pertains to the art-making process. Historical and cultural contexts allow an example to be

made of the visual arts in mirroring appreciation and connection to the world we live in.

3. In grades nine through twelve, students operate with a more sophisticated approach to the visual arts, having developed their skills throughout their primary and middle school education. Focus in high school is on expression of feelings and emotion and on developing a framework to promote a mature understanding of works of art along with context and aesthetic qualities. Students can also “reflect on the nature of human involvement” and differentiate between alternating roles as “viewer, creator, and participant.”

The shift in art education from individual discovery and mastery of a specific medium to performance and self-discovery in the studio environment helps the student develop a more integrated approach to

the study of art. While less emphasis is placed on the mastery of skills, students still learn the formal language of the visual arts by exploring formal elements of design: Line, Shape, Tonality (light and dark), Mass (volume and form), Color, Space, and Texture, as well as the organizational principles of compositional design: Unity and Variety, Balance (Symmetrical/Asymmetrical), Emphasis and Economy, Focal Point, Contrast, Rhythm and Repetition, Scale and Proportion. As in the past, these formal guidelines remain to promote the understanding of the language of art. Building on this language, it is also necessary to understand certain terms that are used by the artist to express a given reality: Representational, Non-representational (non-objective) or Abstract; Conceptual, Idealistic, Illusionistic, Naturalistic, Realistic, Stylized.

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INFORMAL LEARNING

The literature is replete with numerous studies on formal, nonformal, and informal learning. These three broader approaches to the nature of learning provide a wide conceptual framework for the understanding, categorization, and acquisition of knowledge. In the literature, formal learning generally refers to the teacher who follows a pedagogical-content plan. The standard paradigm includes: outcomes or learning objectives, a prescribed learning framework, designated credentialed instructors, awarding of credit, time at task, and instruction sponsored by a recognized institution. D. W. Livingstone's report on formal, nonformal, and informal learning describes a broad framework to determine the boundaries of formal learning (2001). He states that formal education occurs "when a teacher has the authority to determine that people designated as requiring knowledge effectively learn a curriculum taken from a pre-established body of knowledge . . . whether in the form of age-graded school systems or elders initiating youths into traditional bodies of knowledge (p. 3)."

Unlike formal learning, "informal learning" is more difficult to define because there is no consensus among educational researchers as to its meaning. Therefore, the prudent definition of informal learning is basically defined by what is not formal. Informal learning results from everyday activities that are related to work or leisure. The standard informal learning paradigm includes: the transfer of tacit knowledge, limited planning of instruction to allow incidental and spontaneous learning opportunities, and a learner-centered environment which is context specific. According to Livingstone (2001), informal learning is "any activity involving the pursuit of understanding knowledge or skill which occurs without the presence of externally imposed curricula . . . in any context outside the pre-established curricula of educative institutions (pp. 5–6)."

It is evident from the literature that differentiating between informal and nonformal learning can be problematic and can cause erroneous assumptions. The characteristics that define each concept have considerable theoretical overlap. In fact, there is marked disagreement as to the existence of solely informal or nonformal learning. Billett (2000) suggests that all learning takes place in social organizations such as work environments, family settings, or athletic organizations and these organizations have structures to transmit knowledge. For example, the task of earning a merit badge by a Boy Scout is formalized in the procedures and skills required to be successful. Consequently, the differences between what one would consider as formal or informal learning experiences are of degree, setting, or the intended nature of the activity. Further, the debate regarding the differences among the three forms of learning embodies assumptions about the implicit or explicit nature of one form of learning over the other. These discussions generally include the relative effectiveness of each type of instruction in the transfer of both knowledge and skills. A clear analysis among the three forms of learning—formal, nonformal, and informal—can only be discussed in relation to the nature of the contexts or particular purposes of specific learning activities.

FORMAL AND INFORMAL LEARNING AS COMPETING FRAMEWORKS OF LEARNING

The concepts of formal and informal frameworks of learning can be found in the Sophist tradition in classical Greece of the fourth and fifth centuries B.C.E. Isocrates' (436–338 B.C.E) work implies that the study of rhetoric and the perfection of an encyclopedic education were important goals of a progressive Athe-

nian society. The former paralleled informal learning, and the outcome was a practical kind of schooling for the formation of the Athenian citizenry. The latter, being more formal in nature required a broader education to meet the demands of a changing complex society.

Aside from these modes of study, there were at least two philosophical viewpoints as to the meaning of formal knowledge. On the one hand, Plato argued in favor of formal knowledge in universal terms in that deductive reasoning was the primary vehicle in obtaining a conclusion to a valid argument. The end result for any formal knowledge task through Plato's point of view was certainty—that is, a result is necessarily the outcome of any two initial statements or antecedents. In stark contrast to this view, the Sophists, Isocrates in particular, argued that Plato's contention failed to include everyday experience, empirical evidence, and the notion of cause and effect. Instead, the Sophists' view of formal learning was more probabilistic and relativistic in nature and not based on certainty. To this end, formal knowledge, for the Sophists, was primarily concerned with the degree to which an outcome occurred, and not solely on absolute terms (e.g., always, never).

Since the Age of Enlightenment, numerous ways of instruction were formalized to improve upon simple everyday tasks. The nature of organizing and clarifying these tasks appeared to make learning more effective. The learning from these types of situations became generalizeable, and could be applied in a wide range of contexts and circumstances. In contrast, everyday knowledge was believed to be specific to the situation or context (e.g., learning how to repair shoes). Thus, formal knowledge that was considered to be generalizeable to numerous situations was considered to be more valuable (e.g. learning laws of physics and applying them in numerous situations).

Sylvia Scribner and Michael Cole (1973), reflecting on the work of Lev Vygotsky, the well-known early twentieth-century Russian cognitive psychologist, helped to establish a counterview from a socio-cultural or situated perspective on learning. This counterview suggests that certain concepts and skills may be learned more effectively through informal processes. Vygotsky's (1978) work on language and thought demonstrates the importance of informal learning communities on the transfer of particular forms of knowledge. His work has given rise to a

number of areas of research, which include situated cognition (proposed by Jean Lave and Etienne Wenger 1991), scaffolding (proposed by Jerome Bruner 1975), and the development of spontaneous, everyday concepts.

Vygotsky (1978) makes the distinction between spontaneous, or everyday concepts and scientific, conceptually systematic concepts. Spontaneous concepts are concepts that people develop within their informal, everyday environment. These concepts are like little reflections, strong in what concerns the situational, empirical (what the individual experiences and interprets through sensory input), and the practical. In contrast, scientific concepts, also generally identified as conventionally systematic concepts, refer to a hierarchical system of interrelated ideas. Scientific concepts are highly organized and systematic. For example, school instruction, which is formal in nature, is intended to prepare a student to be cognizant of particular concepts and their relationships.

Fundamentals of systematization enter the individual's mind through scientific concepts. Vygotsky (1978) maintained that instruction in scientific concepts is very helpful because it supplies individuals with broader frameworks in which to place their spontaneous concepts. For example, a young boy might have developed the spontaneous concept of a car, but his concept is primarily based on his experience with his mother's car. If one asked him to define the term, he might state, "it's red, takes me places and has a special seat for me." Formal instruction, in which the teacher diagrams modes of transportation (including concepts such as coupes, sportscars, sedans, hatchbacks, or trucks, buses, or modes of rail transportation) can give the child a broader framework in which to place his spontaneous concept and help him understand the broader concept of a "car."

Vygotsky, then, believed that spontaneous concepts moved in an upward manner while scientific concepts had a downward movement (1974). In Vygotsky's own words: "The upward everyday [spontaneous] concept clears a way for a scientific [conventionally systematic] concept and its downward development. Scientific concepts provide structures in turn for everyday concepts by making them conscious and deliberate" (p. 108). James Hiebert and Mary Lindquist (1990) discuss informal and formal knowledge in relationship to mathematical under-

standing. Like Vygotsky's view of spontaneous concepts, Hiebert and Lindquist's position suggests that informal knowledge is comprised of intuitions, perceptual information, invented strategies, and other knowledge that has been acquired in experiencing quantitative challenges in everyday situations.

MOVING BEYOND DEFINITIONS

In summary, the definitions of formal, informal, and nonformal learning were discussed. Formal methods of instruction probably existed whenever two or more individuals convened to complete a particular task. Learning had become more formalized as individuals perfected ways to complete tasks and one of the individuals became more adept at a particular task than others. His or her tacit knowledge allowed the individual to be recognized as the authority, whose function was to transfer that knowledge to other individuals. The division between formal and informal/nonformal became more pronounced as societies became more advanced. As these societies advanced both socially and technologically, the systematic transfer of information became highly valued. Due to its higher level of efficiency, systematic transfer required the formalization of information. Further, as learning was dissected and reduced to specific components, a division between informal and nonformal learning was created. In examining each kind of learning, the dichotomy between formal and informal/nonformal learning may be more philosophical than practical in nature. As suggested by Vygotsky (1978), there is a required integration between the spontaneous/everyday knowledge obtained in informal situations and scientific knowledge taught in formal settings. Therefore, the need to distinguish between these learning paradigms may provide limited utility.

It is evident from the literature that learning is a complex activity with an infinite number of components. The boundaries created by definitions among the various dimensions of learning are artificial and deal with a static set of circumstances. Learning is a dynamic human activity in which formal learning (e.g., lecture and discussion of wastewater runoff) can take place in an informal setting (e.g., park) or informal learning (e.g., building structures and balanced forces) can occur in a formal setting (e.g., kindergarten classroom's block area). The nature of the learning activity can best be understood by recognizing the syn-

ergy produced by the interrelationships among formal, informal, and nonformal learning rather than using a reductionist view of these learning paradigms.

Stephen J. Farenga

EVERYDAY AND INFORMAL KNOWLEDGE

Epistemology is the study of the origin of knowledge. Epistemology has a long and rich record dating back several millennia. The Western debate on the origin of knowledge is dominated by two philosophical schools of the thought—the empiricist and the rationalist traditions. These traditions date back to the classical Greek period. The empiricists claim that experience is the source of all knowledge. That is, empiricists hold that knowledge can come only from observable phenomena. Aristotle was an early empiricist. Today, when we say that a study is “empirically based,” we mean to say that the study is based on observable, quantifiable phenomena. Alternatively, the rationalists argue that knowledge arises from human reason and logic. Plato was an early rationalist. Strictly speaking, the rationalists do not require direct experience with phenomena in order to identify knowledge. A deep divide exists between the radical advocates of each perspective. Yet, as one might suspect, many philosophers did not see empiricism and rationalism as mutually exclusive. There are many subdivisions of philosophies within and across these philosophical schools. Collectively, however, these philosophical orientations have come to define the modern scientific epistemological orientation known as logico-positivism.

Since Aristotle and Plato, there has been a great deal of discourse on how the human brain functions, how people learn, and how knowledge is created. Today, debates on these topics have produced radical changes in epistemology. We can now say that the everyday ways of thinking and knowing are very different from that advocated by the logico-positivist. These changes were precipitated by a confluence of events in the early part of the twentieth century. These events challenged neat and tidy explanations of thinking and knowing presented by the prevailing

logico-positivists. Around this time there was increasing dissatisfaction with the modern logico-positivistic view. For example, the philosopher Karl Popper (1902–1994) argued that observation and reason alone could not account for the progress of scientific knowledge. Popper (1963) suggested that intellectual intuition and imagination were more important than observation and reason. Furthermore, Popper refuted the notion of objectivity in science by introducing the idea of theory-laden observation. Accordingly, Popper asserted that scientific theories (explanations for phenomena) are constrained by pre-existing conceptions. Consequently, observations of phenomena are mere interpretations and subject to dispute. These thoughts eventually opened the door to a school of thought known as the Sociology of Scientific Knowledge (SSK).

In 1962 a philosophical watershed appeared and divided contemporary views of science from traditional, rationalist views. At the time, Thomas Kuhn (1922–1996) presented, in *The Structure of Scientific Revolutions* (1962), a model of theory-change in science. Progress in science from Kuhn's perspective occurred through a revolutionary process. Kuhn argued that the incommensurability of competing paradigms precluded the type of transition and transformation represented by the prevailing philosophical views. The new paradigm presented by Kuhn highlighted the context-bound, cultural-embeddedness of scientific theories.

At about the time when the sanctity of scientific knowledge was being challenged, entirely unique sets of questions were being raised in new and very different programs of study across psychology, philosophy, and education. Some of these programs claimed authority by associating with the postmodern (post-Kuhnian) zeitgeist. When synthesized, contributions from notables such as L. S. Vygotsky (1896–1934), Jean Piaget (1896–1980), Maria Montessori (1870–1952), Noam Chomsky (1928–), Rosalind Driver (1941–1997), Albert Bandura (1925–), and Ernst von Glasersfeld (1917–) yield a much richer and more robust portrait of the human mind and a far more complex epistemological vision. Today, we now are aware that meaning and understanding of the world around us are constructed from complex processes.

The knowledge we create for ourselves is influenced by experience, the situation or context of that experience, language, beliefs, and deeply held, per-

sonal theories about the external world. Furthermore, the knowledge we create is not always directly accessible (or explicit). That is to say, the knowledge we possess may be tacitly held and beyond our immediate awareness, yet it does, nonetheless, influence our actions and interactions with the external world. Informal learning has been described as a natural way of knowing. In this natural way of knowing, people develop complex conceptions, or theories that explain the world around us. They create deeply held belief systems that are difficult to challenge and change. However, this tacit knowledge, alternatively known as informal knowledge, often goes unchallenged. And, if challenged, people will go to great lengths to protect what they believe. Because this knowledge frequently remains unquestioned, it seldom undergoes any rigorous testing (self-examination) and systematic revision. Largely, these personal theories cannot hold up to the type of scrutiny exhibited by more expert perspectives. Therefore, these deeply held personal theories of how the world works are referred to as alternative frameworks. That is, the cognitive frameworks are alternatives to the more robust framework(s) of knowledge accepted within the scientific community. The alternative frameworks and informal knowledge of learners are of great interest to educators because unquestioned knowledge structures may lead to misconceptions (or naïve conceptions) within particular knowledge domains such as science or mathematics. There is a rich body of evidence showing that naïve conceptions often have deleterious effects on the acquisition of new knowledge. The cognitive transition from alternative frameworks to more robust, adequate theories is known as conceptual change.

Teaching for conceptual change is a centerpiece in current educational reform efforts. The aim is to encourage students to challenge what they know (what they have learned informally) in such a way as to promote a positive shift toward more robust knowledge structures and understandings. Nonformal learning environments are particularly well suited to providing opportunities to challenge students' thinking in ways that are more natural and conducive to conceptual change. In most cases, they are purposefully designed to situate new learning in meaningful contexts. In nonformal learning environments, there is a much more natural fit between the processes and outcomes

associated with meaningful learning. To recall, deep conceptual understandings are facilitated when: (1) learning tasks are embedded in authentic situations; (2) the learner is introduced to ideas and concepts in familiar contexts; (3) the learner is expected to apply his or her knowledge in new or unfamiliar settings; (4) there are opportunities for the learner to self-direct or self-engage in learning activities; (5) the social setting is supportive and positive; and (6) the learner is given the opportunity to make explicit what has been learned informally through social exchange and language-rich interactions.

John A. Craven

INFORMAL LEARNING ENVIRONMENTS

The experience of learning in schools is common among people in postindustrial societies. Many people may associate the concept of learning most closely to familiar formal education settings such as schools and classrooms. Yet much of what is learned is not learned in the institution we call “school.” Rather, much of our knowledge about the world around us comes from places outside of the school context. These places include our homes, playgrounds, zoos, museums, parks, libraries, community centers, nature centers, public gardens, clubs, and after-school programs. The area in front of the television, the digital environments associated with computer games, virtual reality interfaces (distance education), and the many other realms available through the Internet are also powerful and influential learning centers. When considering all of non-school-based learning environments, whether they are averaged over a typical week in a student’s life or averaged over one’s lifetime, the time spent learning in a classroom is relatively miniscule when compared to non-school-based learning contexts.

From a broad perspective, non-school-based learning centers are classified as nonformal learning environments. As the name implies, informal learning environments are structurally very different from formal learning environments. Nonformal learning

environments are the ones most adults will have access to once their formal education ends.

In recent decades, much has become known about the differences among formal and nonformal learning environments. At the same time, we have learned a great deal about learning itself, particularly its processes and outcomes. There is now considerable evidence showing that learning (as a cognitive enterprise) is impacted by the environment, or context, in which it occurs. But the context of learning extends beyond the stimuli and resources found in the place of learning. The context of learning now includes the vibrant mix of human interaction, motivation and interest, emotion, culture and language, prior knowledge and personal theories, and cognitive and physical activity that may contribute to or impede one’s cognitive development. The complexity of this system leads many educational researchers to describe the dynamics of intellectual growth and development as the “ecology of learning.”

Recent research sheds important light on learning that takes place outside the school. Ecological views of learning and the advancements in understanding the social, neurological, physical, cognitive, and affective components involved in learning are underscoring the role that nonformal learning environments serve in producing life-long learners who are well equipped to adapt and thrive in knowledge-based societies. The interest in and need to further understand the ecology of nonformal learning environments stem from several conditions.

First, as we move into an increasingly complex, knowledge-based society it is abundantly clear that what is learned solely in schools is insufficient to prepare youth to function in that society. For preschool to grade twelve students, the learning that takes place in nonformal learning environments is proving to be a powerful, perhaps necessary, supplement to the curriculum.

Second, the shortcomings of the depth and breadth of the curriculum found in schools (the “what” that is learned) are compounded by the way (“how”) things are learned in school. That is, the structure and function of classroom-based learning communities are generally not representative of the way real-world learning communities function and operate. Despite repeated calls for reform, learning in schools generally remains an isolated activity. The content learned in classrooms is often decontextualized. Yet we know that meaningful learning is nestled in social situations and authen-

tic contexts. In addition, research into the sociology of scientific knowledge as well as artificial intelligence contributes to a conception known as “distributed cognition.” Most simply, the notion of distributed cognition describes the interactions, interdependencies, and coordination of actions that take place among individuals within a learning organization such as a small, scientific community of inquirers. The organization and structure of classrooms often do not promote the type of positive interdependency reflective of inquiry communities.

Lastly, as we move into a more technological, science-based, knowledge-based society and as the local and global economic forces erase our notion of one life-long vocation, the need to retrain the workforce is increasingly necessary. Research has demonstrated that the models of teaching and learning found in schools are largely inappropriate for adult learners. Nonformal learning environments, therefore, are proving to be very fertile ground for research in the development of adult cognition and adult learning.

The relatively recent yet rapid growth of research in nonformal learning environments has resulted in some confusion and perhaps controversy regarding the use and meaning of some expressions closely associated with the topic. Consequently, the basic terms connected to the research must be introduced and defined. The first term is “formal learning environments.” Formal learning environments refer to places such as classrooms in which (1) attendance is usually compulsory, (2) learning is directed by a teacher, (3) the content and processes of teaching and learning are typically constrained by a curriculum, and (4) the nature of social interaction is largely hierarchical. Both curriculum and instruction in formal learning environments have a long, rich history of criticism. Critics generally argue that the content is usually abstract because it lacks context and real-world connections. The acquisition and accumulation of decontextualized bits of facts, ideas, and concepts are cited as the root cause for the inability of students to apply what they know in new or unfamiliar settings. These failures are most highly associated with the fields of mathematics and science. The utility of science and mathematics is, after all, most deeply connected to their explanatory and predictive powers of natural phenomena.

Whereas the term “formal learning environment” connotes a very uniform or specific, well-defined image for many people, the term “nonformal learn-

ing environment” is broader. As previously mentioned, the gamut of nonformal learning environments ranges from inanimate artificial, technological worlds to live settings like zoos. Because there is such a wide variety of settings and such a wide variety of activities that can take place in those settings, some argue persuasively that it is far more fruitful to focus on types of learning. After all, lectures, often criticized by pundits as an ineffective, didactic, and overly used instructional approach in classrooms, are quite commonly offered for the public by societies, museums, and botanical gardens.

Three broad types of learning—formal, nonformal, and informal—are described in the literature. Although the lines between these can blur, a useful way of categorizing them is the degree to which the learning is goal-oriented, conscious, and directed. In formal learning, teaching and learning activities (cognitive and/or behavioral) target very specific learning outcomes. The learner’s attention to on-task behavior is central to achievement. Also, the instructional approach is usually highly directive.

Though still goal oriented, nonformal learning has more latitude for allowing the learner’s attention to focus on tasks and activities indirectly connected to the goals of learning. In this way, the interest and motivation of the learner are allowed more expression. Furthermore, there may be a less conscious understanding of the outcomes from nonformal learning environments. These outcomes are more likely to be categorized in the affective domain of learning. The opportunities provided for affective learning usually necessitate a less directed nature of learning than found in formal learning, but that does not preclude a fair degree of structure. Lastly, informal learning may be considered a natural form in that it may be more spontaneous and self-motivated/regulated than the other forms of learning. From this simplified perspective, these three types of learning represent a continuum of learning with no definite boundaries. However, the reader is reminded that the ecology of learning is complex and, therefore, any theoretical framework that attempts to delineate types of learning is inherently reductionist in nature. In fact, contemporary conceptions of knowledge (the product of learning) are, in part, a consequence of dissatisfaction with reductionist views on knowledge.

John A. Craven

INFORMAL LEARNING AND DEVELOPMENT

For young children, much of their cognitive, social, and moral development results from their interaction with the environment. Many of the everyday and spontaneous interactions in which children are engaged are informal, and a number of these informal childhood engagements have been labeled as play. In Margaret Lowenfeld's (1991) book *Play in Childhood* a variety of classifications and functions of play are identified. For example, play is viewed as a bodily activity, repetition of experience, demonstration of fantasy, realization of environment, and preparation for life. In some venues, play has even been defined as the work of children. It is clear from the literature that play encompasses a plethora of activities. However, when analyzing the examples of children's play, two common factors appear: active involvement and self-directed behavior.

SOCIAL DEVELOPMENT THROUGH PLAY

Play for children is the renaissance of their overall social development. It provides them with a stage to express their developing social orientations of moral development, social connectiveness, social affiliations, cognitive development, and nurturing behaviors. Play provides an accepted avenue to escape adult control and develop social interaction experiences. According to well-known theorists and researchers like Margaret Mead, Jean Piaget, and Lev Vygotsky, play provides the foundation of social development during the early school years.

For Annemarie Roeper (1988), "play and exploration remain the best learning tools for the young child. Children develop a sense of inner freedom and permission to reach out if they (and their goals and idiosyncratic ways of learning) are supported by the adults at the school. This security and freedom requires a flexible atmosphere with much opportunity for discovery, individualized and group learning, play, and stimulating enthusiastic adults who are learners themselves" (p. 133). It is apparent that play serves an important cognitive function for young children. Through play, the child interacts with his or her environment and increases cognitive and social awareness.

Further, research in the area of neuroscience supports the notion that a child exposed to an enriched environment will have a greater opportunity to develop more complex synaptic connections in the brain.

Piaget observed children at play and identified the different types of learning experiences that are acquired while participating in play. Games as informal learning events have a major significance for Piaget's position on social, cognitive, and moral development during childhood. From play emerges the opportunity to engage in a rich variety of social interactions. Basic to any affiliation with a group is the learning of the rules that permits the group to function. The politics of play requires one to learn how to follow rules, to understand how rules can be made, and to learn how rules are changed. The importance of learning the rules of the game were mentioned by Piaget: It was noted that boys were seen quarreling all the time, but not once was the game terminated because of a quarrel and no game was interrupted for more than seven minutes. In the gravest debates, the final word was always to "repeat the play," generally followed by a chorus of "cheaters proof" (Lever 1976, 482).

For both Piaget and Janet Lever, boys' games are engulfed with elaborate legal rules that provide the opportunity to practice adjudicating conflicts. In contrast, the occurrence of disputes in games for girls seemed to signal the end of the activity. Like Piaget, Lawrence Kohlberg (1978) emphasizes the importance of play in teaching object lessons. He asserts that the act of role taking in conflict resolution is more readily available to boys through their system of games than it is to girls. This is a crucial point for sex differences in moral development according to Kohlberg's theory.

Piaget's (1932) work sustains Kohlberg's theory of moral development and indicates that girls are more "pragmatic" in their attitude toward games and rules, "regarding a rule as good as long as the game repaid it" (p. 83). Carol Gilligan (1982) states that "girls are more tolerant in their attitude toward the rules, more willing to make exceptions, and more easily reconciled to innovations" (p. 10). Marked differences occur when young boys and girls are questioned for their opinions about how the members of the opposite sex engaged in activities involving games. Boys complained that girls did not play rough games but preferred to jump rope or play with dolls. Girls who do prefer to be active or to participate in more muscular activities are viewed as loners or tomboys with little group sup-

port for their preference, even at young ages (p. 13). Lever (1976) provides credence to this notion when she reports that boys tend to play in large heterogeneous groups, that their games are more competitive, that they play outdoors more often than girls, and that the duration of the games for boys is often longer than the games for girls. It should be noted that this view may be changing somewhat with the increased popularity of organized sports for young girls such as soccer, basketball, and volleyball.

MORAL DEVELOPMENT AND PLAY

There are disparate informal learning experiences that are provided to young girls and boys through play. Kohlberg (1978) believes that the moral lessons learned by girls through the games they play are vastly different from those learned by boys. For Kohlberg, girls' games offer a sense of fairness through take-a-turn type of activities. The games are generally played in a noncompetitive arena, with cooperative efforts to achieve equal success for all. Girls appear to prefer noncompetitive games, do not enjoy seeing another's failure, and appear to place a greater value on the continuation of a friendship.

According to Kohlberg (1978), moral development is learned by being actively involved in situations requiring the resolution of a conflict. The traditional types of activities that girls play, and the manner in which they conduct the activities, provide less of an opportunity for controversies to develop and active moral development to occur. Their orientation toward play and the nature of their games leaves girls with fewer disputes to settle and less of an opportunity to develop adjudication techniques.

Contrary to Kohlberg's (1978) theory of moral development, Gilligan (1982) states that girls have a different moral psychology from that of boys. Girls and boys occupy separate spheres of reality as a result of differential socialization. Girls' moral psychology stresses an ethic of caring for other people. The concept of caring responsiveness for people is fostered from the socialization process as explained by Nancy Chodorow (1978). It is an informal process transmitted by modeling appropriate behaviors. Gilligan (1982) suggests that through varied experiences, boys and girls develop different cognitive schemas for justice and legal rights. Girls do not argue over rules or develop elaborate rules for games

because the rules are unimportant. Girls value interdependence and mutual support in activities rather than competitiveness and independence.

PLAY AND THE DEVELOPMENT OF ACADEMIC-RELATED SKILLS

Roeper (1988) stresses that play goes beyond social development and enhances subject-related knowledge. She provides specific examples to demonstrate the importance of play as an informal activity in learning science-related skills—a formal endeavor. The literature provides a variety of studies suggesting that informal play experiences of boys may be more advantageous for the acquisition of academic skills. It appears that girls may be at a disadvantage in science due to their failure to acquire the type of skills obtained by boys informally through play and interests. Gerda Siann (1977) demonstrates that a variety of play experiences have a high correlation with the selection of science courses. It is evident from Lever's (1976) analysis that many of the games that boys play foster the development of independence and organizational skills. Her research indicates that boys' games provide them with an outlet to compete with both friends and enemies in a socially accepted manner. This is a skill that is invaluable in later life.

Other studies note that the divergent lessons and experiences that are obtained through differentiated play affect future science and mathematics achievement, interest, and attitudes of young children. In addition, much has been written in regard to certain child-rearing practices that may fail to produce competent and self-confident individuals. Unfortunately, evidence suggests that boys and girls are not treated equally either by their parents or their teachers. The aggregate effect of these studies highlights the importance of informal learning experiences as they relate to human development.

THE IMPORTANCE OF PLAY

In summary, the importance of play as an informal learning activity for young children cannot be overestimated. Play has even been characterized as the work of children. The activity known as play can occur in a variety of settings as long as children display active involvement and self-directed behavior. The abundance of activities that embody play af-

ford children a medley of opportunities to develop social, moral, and academic-related competencies. It has also been noted that distinct patterns of socialization, interaction, and interpersonal experiences exist for young boys and young girls. Many of the studies allude to the idea that the differentiation in young children's informal experiences influences such things as future social formation, academic achievement, career choice, and moral development.

Stephen J. Farenga

THE DEVELOPMENT OF SCIENTIFIC THINKING FROM INFORMAL ACTIVITY

Scientific thinking refers to the processes involved when an individual bases a conclusion of a statement, activity, or group of tasks on any form of evidence. This evidence is usually provided within a continuum, which ranges from casual observation on one end of the continuum to the results based on a collection of data on the other. Scientific thinking can take the form of empiricism, whereby the individual thinking scientifically bases a conclusion either on the appearance of a phenomenon or on the behavior of data collected for observation. It can also take the form of experimentation, whereby data are collected from two or more groups, one of the groups controlled (without change or modification of variables), and the other experimental (with change or modification of variables). Scientific thinking does not, however, deal with specific content. The term is often misconceived and even distorted when associated with organized disciplines that can be organized under the umbrella of "science" (e.g., biology, geology, physics, chemistry).

DEVELOPMENT OF SCIENTIFIC THINKING

The question of how children develop scientific thinking from informal everyday experiences has been investigated by educational researchers, developmental psychologists, and science educators.

Investigations conducted in both laboratories (clinical interviews) and field-based settings (museums, zoos, aquariums, science-related centers) have fostered an understanding of the importance of effective learning environments. Present in the literature is an emerging paradigm stressing the fundamental importance of socially embedded activities to the development of scientific thinking. The research suggests that these environments, coupled with appropriate adult interaction, foster the acquisition of content knowledge, inquiry skills, and positive attitudes (interest and habits), required components of scientific thinking.

The importance of early informal experiences for the development of eminent scientists was examined by Anne Roe (1953). Inferences made from Roe's research suggest that the specific nature of these informal experiences supports the development of skills, concepts, and attitudes required for scientific thinking. Physicists in her study reported early extracurricular interests that appeared to relate directly to future career interests. As children, these scientists reported that they played with physical gadgets, worked with electricity, constructed erector sets, and enjoyed experimenting with various objects. In contrast to the physicists, the biologists did not report as strong an early interest in informal science-related activities. However, some reported an early interest in topics classified as natural history and some an intense interest that included field studies with the keeping of field notes.

It is believed that providing children with experiences suited to their abilities will enable them to develop cognitively. Everyday experience is necessary in fostering conceptual change and the development of scientific and mathematical thinking. It is suggested that with appropriate experience, a transformation from one form of thinking to another will occur readily. This transformation occurs when the individual's informal understandings are linked with scientific meaning. For example, a preschool child might determine the number of blocks needed to form the sides of a rectangular structure. If three blocks cover one of the sides, the child might conclude that 12 blocks in all (four sides of the structure) are needed to enclose the structure. However, the child may not necessarily encounter the formalization of multiplication until she completes two or three years of formal schooling. Theoretical models were developed

to explain how conceptual change occurs.

Edwin Arthur Peel (1967) supplies an interesting example demonstrating how a child might progress from concrete operational to formal operational thinking. In Peel's scenario, a child, who has a model electric train set powered by a transformer, finds that the train will not run when everything is appropriately connected. The child who functions at the concrete operational stage uses a trial and error method to solve the problem. The child tries one method after another until a solution is found. Over the course of time, when this inefficient method has been outgrown, the child's thought concerning the possible outcomes in the situation will precede action. At this point, the child will check the plug, transformer connections, switch the gear, and the rail fittings. It is apparent that the child has begun to eliminate one variable after another while the remainder of the variables is held constant. The situation begins to formalize scientific thinking. The child identifies possibilities, formulates hypotheses, and begins to solve the problem (see Ennever and Harlen 1972).

INFORMAL SCIENCE AND MATHEMATICS

Researchers in the fields of cognition and education argue that informal science and mathematics include basic perceptions that form the basis of empirical and quantitative inquiry, such as understanding broad concepts like more and less (relative amount) or the location of objects. Cognitive scientists and educational researchers have also posited that human beings possess an underlying biological propensity to engage in activities that involve proto-mathematical or scientific ideas (Farenga, Joyce, and Ness 2002; Ginsburg 1989). The idea that members of all cultures distinguish between the concept of more and less supports the notion that the concept is not culturally bound. It includes principles of counting that on one view develop from "skeletal" biological structures (Gelman 2000). Informal mathematics also includes "informal" ideas like "adding makes more" (Brush 1978) that may develop from experience in manipulating objects or observing events. It also includes culturally derived acquisitions, like the counting words, and even "formal" skills, like writing conventional numbers.

Mostly, informal mathematics is untaught; adults are usually unaware of its existence (apart from simple counting and recognition of plain shapes). However, sometimes parents do teach young children mathematical ideas and reinforce children's spontaneous attempts to deal with mathematical issues (Anderson 1997; Saxe, Guberman, and Gearhart 1987). In addition, a large number of pre-schools and kindergartens offer mathematics and science curricula for a number of their students.

In sum, informal science and mathematics deal with the scientific and mathematical activities that young children acquire during their daily routines. Moreover, young children are afforded these informal cognitive activities depending on the social and physical environment. Researchers have demonstrated that four- and five-year-old children engage in a considerable amount of informal science and mathematics, often during free play. Their involvement with patterns (placing a sequence of objects in a rule-governed manner), magnitude (comparing the height of two or more objects or people), enumeration (counting objects, calculating, or determining cardinality), and spatial activities (creating two- and three-dimensional structures, drawing, using words having to do with place or location) have been frequently observed. Children have also been observed to demonstrate knowledge in classification activities (sorting objects by color, shape, or size) and dynamic processes (creating a situation in which an object changes motion or appearance, for example rolling a ball or toy car from the top of a slide, thus creating a change in motion). The acquisition of young children's informal scientific and mathematical knowledge as a constructive process is preceded by a biological propensity to learn, one's physical and social environment, and one's cultural background. The evidence which supports a biological underpinning for the learning of scientific and mathematical ideas, and the importance of social and physical environments which support learning are two conditions which contribute to the universality of human knowledge in the areas of science and mathematics. Moreover, these conditions foster young children's spontaneous scientific and mathematical inquiry (and interest) in diverse cultural settings.

Stephen J. Farenga

A REVIEW OF INFORMAL EXPERIENCES ON ACADEMIC ACHIEVEMENT

Informal learning for many students occurs within the community, which is comprised of families, peer groups, businesses, and schools, as well as religious and governmental organizations. Each of these community agencies can employ a variety of methods (i.e., independent/dependent, implicit/explicit) to provide informal learning opportunities that transmit cultural messages and affect achievement. The theory of social constructivism supports the claim that knowledge is the product of the interaction between social groups and their practices. The foundation of social constructivism is embedded in Immanuel Kant's idealism, which reflects the notion that people cannot know things directly, and that knowledge of the world is only possible by providing prior definitions. Contemporary constructivists question Kant's *a priori* construct of the world by claiming that there is no uniform definition of categories. For this group of theorists, knowledge is relevant only to a specific period of time or cultural group. Under the paradigm of social constructivism, it is difficult to evaluate ideas and constructs. No independent standards exist, since social constructivism tends to lean more toward relativism—perspectives of truth and morality are not absolute; instead, they are relative to the individuals or cultures holding particular beliefs. Earlier research studies emphasized the role of formal learning environments, such as schools, colleges, universities, and technical agencies, which stressed the absolute nature of knowledge in their relationship to academic achievement. Within these formal settings, achievement was generally measured in relationship to the personal attributes of the student (e.g., intelligence, maturation, motivation, gender), teacher characteristics (e.g., teaching style, gender, intelligence), the school's environment (e.g., homogeneous by gender, ability grouping, school size, student centered), or some combination of these achievement-related variables.

Recent reports have focused on the influence of environmental factors external from formal settings. Further, theoretical models have been developed to

explain the effect of the overlapping influence of the entities in the community. Epstein and Sanders (2000) discuss the importance of the theory of overlapping spheres of influence. They state, "The theory integrates and extends several ecological, educational, psychological, and sociological perspectives on social organizations and relationships" (p. 287). The theory suggests that community members who come into contact with children have a shared responsibility for their development. Key to the functioning of this model is the common responsibility for communication and respect among individuals and agencies involved in the community. The theory changes our understanding of the interaction of family, school, and community from one of sequential development to one of simultaneous influences from childhood through adulthood. These overlapping spheres of influence supply an active context for James Coleman's concept of social capital (1988). The more efficient the community agencies function and interact, the greater the chance of increasing the social capital in the community.

According to demographic data, communities may be characterized by socioeconomic status, level of education, race, ethnic composition, or other descriptions. The research suggests that more than anything else, socioeconomic status (SES) may predict additional characteristics of the neighborhood. Gary Orfield, Mark Bachmeier, David James, and Tamela Eitle (1997) report that SES not only categorizes a neighborhood economically, but also by race, ethnic background, and available opportunity. The combined contribution of all the factors in a community contributes to the culture and the social capital of that community. Culture might be defined as the products, social interactions, and the ideas of a particular group. Two or more cultures may vary on a number of measurable factors. One such factor is the degree to which individual or group efforts are valued. According to Elise Trumbull, Carrie Rothstein-Fisch, Patricia Greenfield, and Blanca Quiroz (2001), "The continuum of individualism/collectivism represents the degree to which a culture emphasizes individual fulfillment and choice versus interdependent relations, social responsibility, and well being of the group" (p. 4). The cultural contrasts between the views of individualism and collectivism create two different social learning environments. "Children

socialized in an individualistic orientation are attuned early on to learning about physical objects in the physical world as a way of facilitating independence. . . . Learning how to manipulate toys is also the beginning of what might be called ‘technological intelligence’ ” (Trumbull et al. 2001, 9). Language in the individualistic orientation is used to mediate interaction, control behavior, and provide the child with additional instruction. In the collectivistic culture, “Holding, touching, and modeling how to carry out a task (rather than direct oral language) tend to be the dominant form of communication between parent and child” (p. 9). Each culture (individualistic or collectivistic) demonstrates how identical samples of behavior can foster different levels of cognitive development based on the cultural context in which the behavior occurred. Trumbull and her colleagues’ message urges us to consider the culturally different ways knowledge may be constructed. If language is decontextualized from the related experience, it may create an ambiguous situation, thereby limiting understanding.

It is essential to understand the influence of informal learning experiences on formal development. A broad body of research has begun to focus on the resources available in a community and students’ opportunities and potential achievement. Drawing from a variety of disciplines, sociology (Epstein and Sanders 2000), developmental psychology (Piaget 1952; Vygotsky 1978), science education (Farenga 1995; Farenga and Joyce 1997; Marjoribanks 1991; Midwinter 1975), and mathematics education (Ness 2001; Saxe, Guberman, and Gearhart 1987), the importance of informal experience in transferring culturally vital information should not be underestimated (Brown, Collins, and Duguid 1989). The implicit experiences learned in the community transmit object-related lessons on equality, civic responsibility, democracy, and other forms of cultural literacy. The experiences one has in a community can foster an awareness of rights and responsibilities as a member of a variety of groups (i.e., religious, ethnic, school).

In most communities, by attending public schools, children realize that they belong to a nation of immigrants and live in a multicultural society. It has been suggested that the manner in which one balances individual cultural literacy with an understanding of the larger community may determine one’s academic success. E. D. Hirsch (1983, 1985) states

that students who possess knowledge about references and symbols of the “mainstream” culture tend to have higher achievement levels than students who do not share in that knowledge. Out-of-school educationally related activities provide children with increased advantages if the experiences gained from the activities are recognized and valued by the school. Stephen Farenga and Beverly Joyce (1997), Jane Kahle (1990), and Luis Moll, Cathy Amanti, D. Neff, and Norma Gonzalez (1992) suggest that everyday activities foster skills and knowledge related to more formal learning. Laurence Steinberg (1996) has a somewhat different reason for student achievement. He suggests “that the sorry state of American student achievement is due more to the conditions of students’ lives outside of school than it is to what takes place within school walls” (p. 184). Steinberg identifies numerous factors beyond the classroom in the informal community environment of the students that contribute to poor academic performance. In general, he identifies: (1) “the high prevalence of disengaged parents”; (2) “the contemporary American peer culture that demeans academic success and scorns students who try to do well in school”; and (3) “activity schedule[s] that demand little academic energy from students when they are not in the classroom and permits students to devote excessive amounts of time to socializing, part-time employment, and a variety of leisure activities” (pp. 187–188). Steinberg emphasizes that it is an attitude factor that hinders achievement. The reason for poor performance on high-stakes tests and other international comparisons of achievement has to do with the limited amount of hard work and not the innate ability of the American student. Therefore, school reforms such as an increase in academic standards, reorganizing schools, or instructional changes would make little difference in academic achievement without a modification in society’s attitudes (Steinberg 1996).

An alternative view to school reform requires an examination of informal learning environments within a community. Creating equality in education requires that we look beyond the formal setting of the classroom and school to the environmental press of the informal setting involving the family and the community. Some communities may not have the appropriate resources to promote students’ intellectual and social development. It has been demonstrated that parents of different socioeconomic status often

have different childrearing practices that may impact their children's learning. David Baker and David Stevenson (1986) report that parents with formal educations and higher socioeconomic status are more likely to be involved with their children's education than parents from a lesser socioeconomic status. The literature is replete with reports that substantiate the link between students' family economic attributes and students' achievement (Caldas and Bankston 1999; Coate and VanderHoff 1999; Cohen 2000; Sutton and Soderstrom 1999; Watts 2003). Elizabeth Cohen (2000) states: "One of the oldest, most reliable findings in sociology of education is the relationship between socioeconomic status of a family, race, ethnicity, and academic achievement" (p. 274).

The construction of a combined variable to represent home and community has been discussed in the literature and used in research as predictor variable for school achievement. Certain studies have employed a poverty index as a combined measure of the cumulative influence of the home and community. When poverty is endemic throughout a community, the resources including social capital available to the individual or family can be in limited supply. In prior research, the variables of home, school, and community were considered as separate entities. Research questions generally decontextualize each one of the variables to avoid interaction effects. Little consideration was given to their combined contribution and overlapping influences. The research from James Coleman (1988), J. Ward Keesling and R. J. Melaragno (1983), and Joyce Epstein (1990) have each demonstrated how the home, school, and community may interact to determine formal educational outputs of students. In essence, these and other studies suggest that the informal experiences of the home may be responsible for the formal achievement in school.

Research that examines the effects of environment, experience, and brain development provides additional perspectives for the consideration of the relationship of informal experiences on human development (Bateson 1979; Greenough, Black, and Wallace 2002). The experience-expectant explanation proposes that critical times exist to pair naturally occurring environmental stimuli with the appropriate maturational readiness of the organism. These naturally occurring environmental experiences supply the required stimuli for the development of sensory organs and the brain. Timing the experience with the

readiness period is paramount, and may provide some adaptive value to the organism. Research identified that brain formation has sensitive periods in which sensory-system deprivation negatively affects the development of the modalities (Feng and Rogowski 1980; Movshon and Von Sluyters 1981). These studies indicate that there are definitive periods in which natural environmental experiences need to be present in order for the proper development and future functioning of the sensory organs. The experience-dependent explanation involves the storage of environmental information that is uniquely experienced by the individual. This information may be available in the environment at any time. However, the individual must be ready to act upon the stimuli and integrate it through the formation of new synaptic connections. These connections form in response to the stimuli in the environment. The quality of the environmental stimuli may be the critical component of early enrichment in child development. Also, what appears to be more critical than enrichment is deprivation. Research provides more detailed explanations of the negative impact of deprivation, but does not provide specific formulas for the levels of enrichment that foster increased cognitive development (Gopnik, Meltzoff, and Kuhl, 1999). An important aspect of informal learning experiences may therefore be related to the experience-dependent explanation for the storage of information that is specific to the individual. The experience-dependent explanation for the storage of information is affected by the unique experiences of the individual. If the individual has a deficit of informal learning experiences that provide a myriad of problem-solving situations, the brain may have limited opportunity to develop neural networks as a response to the complex behaviors.

Stephen J. Farenga

PERSONAL AND PROFESSIONAL GROWTH

We live in a very dynamic, fluid society and advancements in science, technology, and communication are exerting powerful, inexorable forces that are continually shaping and redefining the roles of

individuals and groups in the broader community. To a large extent, these forces are also rapidly changing the skills and knowledge needed to survive and thrive in this global, knowledge-based society. At the same time, our society is placing great value on performance and outcomes. Consequently, many professional and educational organizations have generated lists of “competencies” to serve as learning frameworks for their institutions. The competencies are frequently described collectively in terms of scientific, technological, and informational literacy. Literacy in these critical areas is widely regarded as a requisite characteristic of an individual well equipped to contribute to the economic, environmental, and health-based stability of one’s local, national, and global community. Rapid advances in knowledge and skill bases create the need for cognitive retooling. Further, the list of competencies is increasing in number and complexity. Consequently, the current movement in education emphasizes the preparation of life-long learners as a critical goal in human development. In a broad sense, life-long learners have the knowledge, skills, and the habits of mind for ongoing, sustainable, self-regulated learning in personal and professional domains. Whereas formal educational systems focus largely on training and education at the initial level, nonformal learning environments represent practical pathways to the personal and professional development of the adult learner. Currently, chief among the nonformal environments are those found in the electronic realm such as the Internet, virtual reality, television, and other digital environments.

Unlike most formal learning environments, the Internet provides learners with opportunities to pursue interests, access information, collaborate with others, and engage in cognitive processes typically associated with active, involved, life-long learning. The Internet’s capacity to connect learners by bridging learning communities over barriers of time and distance makes the medium one of the most ubiquitous forms of personal and professional development for adult learners. What once may have been considered a supplemental boon to the formal educational environment (school classroom), the Internet may now be considered a threat because it is increasingly supplanting rather than augmenting traditional instructional approaches. At the very

least, the Internet has become the conduit for powerful alternatives to formal educational environments. Even a cursory search on the Internet yields an enormous number of vehicles for personal and professional development. They range from chat rooms for people with similar interest and hobbies to virtual universities offering terminal degrees in advanced subjects.

Educational researchers are in the early stages of understanding the developmental needs of adult learners in informal learning environments as they are related to ongoing improvement of knowledge and skills for personal and professional development. Yet the economic and social consequences for failing to enhance informal learning environments for continuing education and the growing recognition that formal learning environments alone cannot satisfy the needs of tomorrow’s life-long learners are evident in the educational community. Governmental agencies in nations around the world are addressing the issues and concerns relating to the expanding need for continuing education for the professional growth of its citizens. For example, the Norwegian Institute for Adult Education recently released its longitudinal study into the validation of nonformal and informal learning in Norway. The study, *The Realkompetanse Project (1999–2002)*, was designed to “create a national system for the documentation of adult’s nonformal and informal learning, with legitimacy in both the workplace and the education system” (Kjølseth 2002). The project represented part of the national workplace and educational reform system aimed at meeting the needs of the broader population to develop skills for the workplace and society. Norway’s efforts to understand, support, and enhance adult learning in informal learning environments resonate with those of many other countries. Similar national programs are found in the Philippines, Australia, Canada, Germany, and Greece, among others. In a more collective approach, the European Training Village (www2.trainingvillage.gr/etv/nonformal/index.asp) presents an electronic forum for constituents of European nations dedicated to professional development, vocational training, and promoting lifelong learning.

Given what is now known about the brain, how people learn, and the cognitive activity required for in-depth, meaningful learning, the educational

experiences created through the Internet not only challenge our notions on the role and viability of traditional approaches to education, but also offer new insights into the processes of learning itself. There is a growing body of research in the domain of information technologies and cognitive processes such as problem solving, cognitive visual spatial reasoning, selective attention, concept formation and acquisition, and knowledge representation. And, as technological advancements continue, the oppor-

tunities to explore aspects of human learning within digital environments become richer and more accessible. Collectively, the recent advances in artificial intelligence, explorations into situated learning and distributed cognition, and broader views of developmental theories pose ever-greater challenges to our current theories of learning, epistemology, inquiry, and human growth and development.

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TECHNOLOGIES IN EDUCATION

Before the twentieth century, the three primary means of instruction were the teacher, the textbook, and the chalkboard. For most of the twentieth century, this remained largely true, with print media the predominant technology in education. Books, paper, pens, and pencils were the fundamental means for accessing, communicating, and otherwise sharing information. While many would argue this is still true today, technology's increasing influence and impact on education cannot be doubted. Since the turn of the century, teachers have used a variety of audio and visual aids to supplement instruction, including film, radio, slides, recordings, and the overhead projector. During the last twenty-five years, educators and schools have made increasing use of new technologies including computers, communication networks, and digital media. While the history of the early technologies is not ignored, this chapter focuses on these newer technologies. Some important terms must be addressed before this discussion. Instructional media means supplementary items used for educational purposes beyond the teacher, textbook, and chalkboard. In fact, in the United States, instructional media were first called "audiovisual aids," which reflected their use as supplements or aids for the instructor. Two more recent terms, instructional technology and educational technology, include instructional media but emphasize the learner rather than the technology. Educational technologies are not single technologies but complex combinations of hardware and software. These technologies may employ some combination of text, audio, video, and computer code, with the resulting content delivered locally or across great distances. Although technological applications are frequently characterized in terms of their most obvious hardware feature (e.g., a VCR or a computer), from the standpoint of education it is the nature of the instruction delivered and the learning accom-

plished that is important rather than the equipment delivering it.

Perhaps the first use of instructional media can be traced to the school museum, a collection of exhibits, maps, photographs, lantern slides (forerunner to the slide projector), study prints, and other instructional materials. A catalog of materials allowed teachers to request specific items. The first school museum opened in St. Louis in 1905, and soon after others appeared in Reading, Pennsylvania, and Cleveland, Ohio. Horsedrawn wagons and then trucks circulated materials to local schools. These museums served much the same purpose as today's school and school district media centers. The majority of the items displayed in these school museums were visual media. Projection devices included the magic lantern (a lantern slide projector) and the stereopticon, a single-user device for viewing stereographs, or three-dimensional photographs. This 3-D view is actually two images mounted side by side. Each picture was taken from a slightly different viewpoint corresponding approximately to the spacing of the eyes. When seen through a stereopticon, the left eye sees only the left photograph and the right eye its corresponding half, thus forming a stereoscopic or three dimensional image.

The increasing interest in visual materials led to the visual education or visual instruction movement. New York state founded the first visual instruction department in 1904, and the first catalog of instructional films was published in 1910—the aptly named "Catalog of Educational Motion Pictures." These early instructional and trade catalogs included industrial, travel and scenic films, sports and acrobatic subjects, dances and ballets, military and historical stories, fairy tales, as well as religious and biblical topics. It was not until the late 1920s that clear distinctions began to be made regarding films for entertainment and films for instructional purposes, and

that sound began to appear in greater numbers of motion pictures. Thomas Edison, who once believed films would replace books in schools, published his own catalog of instructional films. His first production was a series on the American Revolution and he went on to develop several scientific and historical films. The burgeoning interest in visual media led to the formation of visual instruction departments at universities, which later became audiovisual or media science departments.

The addition of sound to motion pictures was not the only experiment with sound for instructional purposes. During the 1920s, both commercial and educational radio stations began broadcasting to classrooms as the U.S. Office of Education promoted the use of radio instruction. Much of this early educational programming consisted of classroom lectures. The Ohio School of the Air, launched in 1929, was a cooperative venture between Ohio State University and a Cincinnati radio station, and was broadcast to schools and homes. In California, schools broadcast lessons on topics such as writing, math, and history. Public school systems in Cleveland, Detroit, Chicago, Portland, Des Moines, Buffalo, and Rochester also made extensive use of educational radio. Unlike film, which survived the transition from motion picture projector to videotape and VCR, radio's popularity as an instructional tool declined rapidly, and by 1940 had been largely abandoned.

World War II played a significant role in the development of the field of instructional technology. The U.S. government produced several hundred training films, and purchased more than fifty thousand projectors to view them. Other technologies that were used extensively included slide projectors, audio recording and playback equipment, equipment simulators, and the newly invented overhead projector. Training manuals and other materials were developed to guide instructors and students in the use of these films and other instructional aids. Mediated instruction gained new prominence, as research programs emerged to identify principles of learning as well as effective audiovisual development and instruction. However, this research had little influence on school practice because reports were not widely available, and many educators were either unaware or disinterested regarding the findings.

As previously mentioned, the overhead projector emerged during this time as an important training

tool, one now widely available in contemporary classrooms. The overhead projector is today the dominant projection device in schools for numerous reasons. It is a simple and versatile device, easily used with learners of all ages. Prepared transparencies often accompany textbooks or they can be quickly made, and they allow for controlled disclosure of information. Perhaps most importantly, teachers can maintain eye contact with students to monitor instruction and facilitate classroom management.

The 1950s began a period of tremendous interest in television as an instructional medium. Federal Communications Commissioner Freida Henneck led the effort to reserve space for educational television (ETV). In 1952, the Federal Communications Commission set aside 242 channels for educational television. KUHT in Houston, Texas, was the first noncommercial television licensee. By the 1960s, there were over fifty such stations. The mission of these educational television stations was to present instructional programming, primarily formal classroom instruction and enrichment. The dominant model was based on talented teachers delivering lectures that would then be broadcast to classrooms, where local teachers would deliver individual instruction to supplement the lectures. Educational television was continually plagued with financial problems. As a noncommercial enterprise, ETV needed to rely on outside sources for funding. Private foundations, such as the Ford Foundation, contributed millions of dollars in support. Estimates of the Ford Foundation's total contributions range between \$170 million and \$300 million. Projects sponsored by this foundation included a closed-circuit television system throughout the Washington County Schools in Maryland, college courses taught via closed circuit TV at Pennsylvania State University, and the Midwest Project on Airborne Television Instruction. The 1962 Educational Television Facilities Act provided temporary financial relief, with \$32 million federal dollars granted for the creation of educational television stations. However, most projects ended when external funds ran out, or failed due to the low quality and poor pedagogy of the programs.

The establishment of the Carnegie Commission on Educational Television in 1965 was critical to the survival of ETV. For two years the commission researched and analyzed the future relationship be-

tween education and television. In 1967, educational television was officially renamed “public television” to reflect new mandates of the Public Broadcasting Act. Public television would still offer formal instruction (intended for the classroom) in topics such as literacy, mathematics, science, geography, foreign language, and high school equivalency. However, public television would also offer programs intended for a wider audience, with children’s shows as well as informational, cultural, and lifelong learning programming. This is what we know today as public television or the Public Broadcasting Service (PBS).

Today, most instructional television in the classroom takes place through videotape rather than live broadcasts, thanks to the invention of the video cassette recorder (VCR) and the video home system (VHS) tape format. The first VCRs appeared during the 1970s. The concept did not catch on right away, but by the late 1980s it was becoming common technology in homes and schools. The VHS tape has been the most popular format for personal video recordings and video store rentals. However, it is presently being replaced by digital recording and playback media including mini-digital videotape, hard disk recorders, and digital versatile discs (DVDs).

The next wave of educational technology began in the early 1980s when the microcomputer and related hardware and software first appeared in schools in significant numbers. At that time, classrooms began using stand-alone computers from companies such as IBM, Apple, Commodore, and Radio Shack. These systems were variously called PCs, Apple II, PETs, and TRS-80. The first microcomputers had a user interface, or operating system, based on typed words and commands. In 1984, Apple introduced the first personal computer based on a graphical user interface (GUI) using a mouse as a pointing device. The GUI and mouse became the foundation for the Microsoft Windows operating system, and this GUI-based method of computer interaction dominates computing to this day. Educators were attracted to personal computers because they were relatively compact, inexpensive compared to their mainframe ancestors, and perceived as versatile and powerful. Today, nearly all teachers and students have access to personal computers in schools, libraries, or at home.

GLOSSARY OF INSTRUCTIONAL COMPUTING

Computer-based education (CBE) and computer-based learning (CBL) are the broadest terms, and refer to any kind of computer use in educational settings. These uses include drill and practice, tutorials, simulations, instructional management, supplementary exercises, database development, hypermedia authoring, word processing, and other applications. These terms may refer to computer activities that reinforce teacher-led lessons, stand-alone computer-based learning activities, or applications where students have primary responsibility for assembling and presenting content.

Computer-assisted instruction (CAI) was once used much like CBE and CBL, but now is applied in a narrower context. CAI most often refers to drill-and-practice or tutorial activities offered either by themselves or as supplements to traditional, teacher-directed instruction. CAI typically does not require a computer be connected to a network.

Computer-based instruction (CBI) is generally associated with CAI. CBI may be provided by readily available commercial applications or may refer to instructional units developed with authoring tools or authoring systems. These authoring tools allow the development of interactive computer-based instruction without the need to know challenging programming languages such as Pascal or C++. In the world outside education, the result of these programming efforts is often called computer-based training (CBT).

Computer-managed instruction (CMI) can refer either to the use of computers by educators to organize learner data and make instructional decisions, or to activities where students’ progress is monitored, assessed, recorded, and then guided to appropriate instructional resources for review or further development. Most CMI systems also offer the ability to adjust content material for individual students. ICAI or intelligent computer-assisted instruction is similar to CMI. ICAI systems are generally focused on more mathematically oriented domains such as arithmetic, algebra, and programming. ICAI, sometimes referred to as an Intelligent Tutoring System (ITS), incorporates expert

knowledge into an instructional model designed to mimic the behavior of an experienced teacher. Although ICAI is an area of active research, ICAI programs in the schools are not widespread.

Integrated learning systems (ILS) are complete computer-based systems that combine hardware, software, curriculum, assessment, and management in a package available from a single vendor. These systems employ a centralized computer server accessed over local area networks, and generally address basic skills and core subjects across multiple grade levels.

Computer-mediated communications (CMC) refers to the use of networked computer systems and electronic communication systems to support the creation and exchange of information.

CLASSIFYING INSTRUCTIONAL COMPUTING

Early books such as *Mindstorms: Children, Computers, and Powerful Ideas* by Seymour Papert (1999), and Robert Taylor's *The Computer in the School: Tutor, Tool, Tutee* (1980) provided a printed historical context for the earliest applications of computers in the classrooms. In fact, the trichotomy "tutor, tool, tutee" has become a widely used classification system for describing instructional computing software.

Tutor refers to the use of the computer as teacher, presenting instruction directly to students. Tutorial uses are those in which the technology does the teaching and the system controls what material will be presented to the student. Tutorial applications present information and/or display a phenomenon, and then require the student to solve problems, answer questions, or engage in some other procedure to check understanding. Based on the response, the computer then presents new information, offers reinforcement, or remediates. Tutorial applications of computers in education date back to the 1950s, when researchers at IBM designed one of the first CAI programs to be used in schools. Other large-scale systems emerged during the 1960s and 1970s. In 1963, IBM established a partnership with Stanford University and researcher Patrick Suppes to design and develop the first comprehensive CAI elementary school curriculum for reading and mathematics. Suppes designed highly structured computer-based

systems featuring learner feedback, lesson branching, and student record keeping, and helped to set standards for subsequent instructional software. Suppes' work later formed the basis for the educational software company called Computer Curriculum Corporation. PLATO (Programmed Logic for Automatic Teaching Operations) originated at the University of Illinois, and is probably one of the best-known CAI efforts. Looking for ways to use extra capacity on the university's mainframe computer, researchers coupled a discarded television monitor with a primitive keyboard to display slides and computer graphics. Eventually over fifteen thousand hours of PLATO lessons were developed. Today, a descendant of the PLATO system is available for personal computers. TICCIT (Time-Shared Interactive Computer Controlled Information Television) was another major CAI system, developed at the University of Texas and Brigham Young University. TICCIT was originally intended for college students, but another version was later released for elementary schools. TICCIT was one of the first large-scale projects to address learning theory and instructional strategies in the design of the course materials, and among the first to incorporate some degree of learner control. All of these computer-based tutoring systems had three characteristics that distinguished them from other types of audiovisual media. First, continuous, active student response was required. Second, the student received immediate feedback on whether each response was correct, leading directly or indirectly to correction of errors. Third, the student generally worked at his or her own pace. Typical categories of tutorial software found on today's microcomputers are: (1) tutorials, (2) drill and practice, (3) simulations, (4) instructional games, and (5) problem solving.

The most popular way computers are being used in education today is as tools in the learning process, rather than as instructional delivery devices. The computer acts as an assistant, aiding the teacher or student in performing routine tasks. Word processing, presentation software, telecommunications, desktop publishing, database and spreadsheet applications, electronic encyclopedias, drawing, painting, and graphing programs are examples of tool uses. The popularity of tool software is primarily due to the fact that teachers can integrate this software into instruction without making major changes to the

curriculum. Also, these applications mirror the ways personal computers are used in the workplace and at home. Word processors, for example, are generally considered the most widely used tool for personal productivity. Often, tutorial products do not easily match a given course of study or have application beyond a few topics. Tool software is designed to facilitate educational and work-related tasks. Such applications are flexible, lending themselves to a wide variety of activities across the grade levels and throughout the curriculum. This is especially true of computer telecommunications and the Internet.

Computers today are increasingly connected through local area networks (LANs) and wide area networks (WANs). LANs connect computers generally within a given room, building, or campus. WANs cover larger geographical areas. The most extreme example of a WAN is the Internet, a vast collection of computer networks linking millions of computers and hundreds of millions of people. The Internet offers teachers and students unprecedented access to information sources, and the means to communicate with others through electronic mail (e-mail). The most common applications in education are found in electronic mail and information retrieval using the World Wide Web (WWW). The WWW is built on the related concepts of hypertext and hypermedia. Hypermedia describes computer applications that link information elements (text, graphics, audio, and video) in such a way that users can jump easily from one to another. Hypermedia offers an interactive learning environment to be explored by individuals largely choosing their own pathway through the informational elements.

Tutee applications have computers function as the learner, thus reversing the roles of computer and student as seen in CAI. The learner teaches the computer to perform some task. When first introduced, most computers were limited to programming in BASIC, an acronym for Beginners All-purpose Symbolic Instruction Code. The first tutee applications in education likewise involved programming the computer. In most cases, the first computers in schools appeared in mathematics classrooms because math teachers were interested in learning how to program them, and because computers were inherently suited to process numerical information. One of BASICs's descendants, Microsoft's Visual BASIC, is now one of the more popular programs for designing multimedia programs.

Logo is a computer programming language developed by Seymour Papert and others at the Massachusetts Institute of Technology. Logo was the first computer language created for education, specifically, elementary school children. Primarily "log(ically) symb(o)lic," hence the term Logo, the language allowed users to give simple directional commands to a small, mobile robot tethered to the computer. This robot then drew patterns on paper placed beneath it, using an attached pen. This robot was called a "turtle." This turtle later became an onscreen pointer which children could direct to draw geometric shapes and patterns. The Logo language, while less popular in schools today, is the basis for Lego Logo, a popular toy where youngsters can use Lego building blocks, small electric motors, and the Logo language to construct and control simple machines.

Programming languages such as BASIC, Pascal, and C++ were too complex to be widely useful for teachers and students to develop instructional materials. Authoring languages and tools were developed to fill this gap. However, early efforts such as PILOT, MicroTUTOR, and COURSEWRITER, and later LinkWay and ToolBook, remained too challenging to ensure widespread use. In 1986, Apple Computer included an authoring program with each Macintosh sold. HyperCard was a comprehensive system that used the concept of multimedia, and added a programming language of words and phrases as close to English as anything else previously available on a microcomputer. A single part of an application was called a "card," with the collection of cards comprising an entire HyperCard application called a "stack." Roger Wagner Publishing introduced a similar product called HyperStudio in 1989. Like HyperCard on the Macintosh, HyperStudio used buttons and objects on the screen to direct movement through a stack application, and employed a similar English-based scripting language. Largely due to its ability to run on both Macintosh and Windows platforms, HyperStudio is the most popular hypermedia authoring tool used in K-12 schools.

TECHNOLOGY TODAY

Computers and communications technologies are transforming many sectors of our society. Computing power is more available and affordable than ever before. Digital transmission can deliver instruction

or connect people thousands of miles away. More powerful and less expensive hardware, improved software, multimedia formats, as well as widespread access to the Internet and the WWW, have all contributed to a rapid increase in and use of technology for teaching and learning. However, as with the history of most other media and instructional technologies, increasing quantity and improved access does not necessarily indicate sustainability or quality of application. In reviewing the history of numerous technologies in education, a recurrent theme clearly emerges—anticipated impacts on the teaching and learning process were rarely realized. The great initial enthusiasm for a particular technology fades, as classroom trials and curriculum integration reveal challenges to widespread use and few lasting improvements in teaching and learning.

Studies of instructional uses of technology over the past twenty years have taken a new turn, showing not just whether a technology can teach or how well it compares with conventional instruction (the focus of much earlier media research), but the effects that technology has on what is learned and how it contributes to the learning process. There are enough cases where technology integration has been successful to tell us the effort can be a productive one. However, there are many cases where schools invested in technology that turned out to be poorly used or to be used in ways that merely perpetuated the status quo. From the successes we have learned technology often produces unexpected benefits for students and teachers. From failures we have learned that implementation without thoughtful planning, attention to standards, and sustained support is nearly always futile. Given the widespread impact of digital technology in all sectors of society, and the more thoughtful ways we evaluate its educational effectiveness, computers, the Internet, and other digital media will likely bring about more significant and sustainable changes than the technologies that preceded them.

Andrew J. Brovey and Daniel J. Brovey

TECHNOLOGY INTEGRATION

The Telecommunications Act of 1996 expanded the traditional definition of universal service, that is, na-

tionwide phone service at a reasonable cost to consumers, to include specific benefits to schools and libraries. The act authorized the Federal Communications Commission (FCC) to create a program offering discounts, called E-Rate, to these institutions on telecommunications services such as phone service, network connections, Internet access, and related equipment. The E-Rate and other federal, state, and local funding have been the catalyst for tremendous progress in equipping the nation's schools with computers and Internet connectivity. Over the past ten years the nation has invested some \$40 billion to bring educational technology and Internet connectivity to America's schools. Today, nearly every classroom has one or more computers, and virtually every school is connected to the Internet. Whether technology should be used in schools is no longer the issue in education. Instead, the current emphasis is on ensuring that technology is integrated effectively to promote student achievement and create new opportunities for learning. A review of the literature on integrating technology in the classroom shows that planning, professional development, availability of resources, technical and instructional support, and school leadership largely determine the success of technology integration efforts.

PLANNING

Technology is rapidly emerging as an important component of teaching, learning, and school reform in America. In this case, the term "technology" refers broadly to computer hardware and educational software, computer-based multimedia, and the Internet. These technologies are often promoted as solutions for improving learning before teaching and learning needs are clearly identified. In fact, research consistently shows that technology per se does not improve student learning. Although technology can support educational change, it will have little impact without accompanying planning at the classroom, school, and district level. The research literature clearly shows that careful planning is a prerequisite for the effective integration of technology in education. Numerous educational organizations and professional societies have issued guidelines for technology planning. In general, they agree plans should involve education stakeholders in their design, specify clear objectives related to education goals and

standards, address education and staff development, incorporate “best practices” that have been tested for their educational benefits, and measure results.

With students being held to higher standards and teachers being held accountable for student achievement, educators must demonstrate that learning goals related to technology are met. Evaluation is necessary to gauge the effectiveness of technology integration efforts and must be included in any plan. Preformative evaluation assesses student and educator needs during the planning process. Intended goals are clarified and strategies for gathering data about reaching them are set. Evaluation continues with formative evaluation, which is conducted during integration activities. Formative evaluation provides feedback and determines improvements that can be made during the activity. The evaluation process concludes with summative evaluation conducted after the activity. This part of the evaluation process assesses whether the specific learning goals for students using technology have been achieved or whether there were unintended results. Measures might include grades, scores from standardized tests, and results from alternative assessment such as student portfolio evaluations. Schoolwide indicators might include statistics such as retention, graduation and dropout rates, enrollments in advanced classes, or changes in disciplinary actions. Summative evaluation allows stakeholders to judge the overall merit or worth of the activity and gives decisionmakers feedback needed to remedy deficiencies and improve future plans.

PROFESSIONAL DEVELOPMENT

Ongoing professional development should be an integral part of the school technology plan or overall school-improvement plan. This approach ensures that professional development is considered an essential factor in using technology to improve teaching and learning. A variety of studies indicate that technology will have little effect unless teachers are adequately and appropriately trained. In a report examining the results of over three hundred studies of technology use, J. Sivin-Kachala and E. Bialo (2000), concluded that teacher training was the most significant factor influencing the effective use of educational technology to improve student achievement. Professional development for teach-

ers and technology has two essential components. They are:

1. **Application of adult learning theory or andragogy:** Adults require relevant, hands-on, concrete experiences with adequate support, appropriate feedback, and long-term follow-up. This type of professional development is very different from traditional one-time teacher workshops. Research indicates that teachers learn and incorporate new information best when it is presented over a long time frame instead of a single session. Activities should include a variety of learning experiences, such as mentoring, modeling, ongoing workshops, special courses, structured observations, and summer institutes.

2. **Grounding in Context:** The best integration training for teachers does more than simply show them how to add technology to what they are already doing. Good professional development is job embedded and linked to learning outcomes. It provides activities in the context of practice, demonstrating projects in specific content areas, and helping teachers integrate technology and subject matter. Activities should enhance teachers’ instructional design and assessment skills as well as classroom and technology management abilities.

When asked, teachers are nearly unanimous in concluding that the integration of technology into instruction is a difficult, time-consuming process. Only those teachers who believe technology use will lead to significant benefits for them and for their students will undertake the associated challenges. Individual teachers, like most people, judge an innovation’s advantages and disadvantages relative to their own situation. These situational benefits include flexibility, simplicity, compatibility, profitability, and relative advantage. Teachers are generally not impressed by a device’s technical superiority or the improved speed of delivery it may offer. They do not share the engineer’s penchant for efficiency nor consider themselves technicians who mechanically apply skills, tools, and knowledge to learners. Teachers carefully consider the impact of innovations on the learner, the classroom, and the institution, while simultaneously seeking to satisfy the mandates of government agencies and professional societies.

The dominant use of technology as a classroom

tool initially focused on incorporating general-purpose software that supported traditional activities, tools such as word processors, electronic gradebooks, and presentation packages. This emphasis on adopting general-purpose applications for educational purposes continued with the spread of the World Wide Web and associated software for conducting searches and finding information. Schools are just beginning to explore methods of using computer-based tools to foster meaningful, student-centered learning, including experiences in collaborations, real-world projects, and critical analysis. These instructional changes are closely tied to changes in teachers' beliefs about learning, teacher-student roles, classroom management, and other instructional practices. Studies showed students were less likely to become bored with computers when teachers used technology as one tool among many in their instructional repertoire. In such classrooms, teachers used computers only when they were the most appropriate tool for completing the assignment, not simply because they were available. Teachers who are better prepared to teach using technology and are more knowledgeable about computers tend to use them in a greater variety of ways, and are more likely to have their students use technology in tasks that require higher-order thinking.

Lack of time is the most frequent impediment teachers cite when identifying barriers to technology integration. Teachers need time to design activities, adapt those suggested by others, experiment, and assess results. They need opportunities to discuss technology use with other teachers, whether with near-peers face-to-face, or with colleagues through email, online discussion or videoconferencing. Acknowledging the demands of engaged learning using technology may require the school district to make some adjustments to the school-day schedule, such as longer class periods, more team teaching, and more interdisciplinary work. Helping teachers learn to integrate technology into the curriculum, and giving them time to do so, are critical factors in successfully implementing technology in schools.

AVAILABILITY OF RESOURCES

The technology plan and accompanying professional development cannot occur without a significant commitment of resources by the school district. The dis-

trict must purchase the type of equipment necessary to meet the learning goals identified and provide for ongoing maintenance and upgrading. The technology used for professional development should be the same as the technology used in the classroom, most often a networked computer. Resources should be available to provide teachers with technology they can use at home or in private to become comfortable with the capabilities and challenges it offers. The number and age of the computers also make a difference. Many schools have computers that are obsolete, and it is not uncommon for schools to still be using machines that are a decade old. There are wide discrepancies in accessibility from state to state and from school to school, with high-poverty schools typically having fewer and less capable computers.

Computers can be either in a centralized location such as a computer lab, distributed in the classrooms and media center, or arranged in some combination of the two. Distributing equipment throughout regular classrooms seems equitable, but is likely to have a strong impact only if there is enough technology to give each learning space a critical mass of machines. Placing one or a few computers in every classroom does not appear to be effective. Five to eight modern computers per classroom seems to make technology projects feasible. D. S. Statham and C. R. Torell (1999) suggest that a one-to-five computer-to-student ratio would assure students "near universal access." Results from the long-term Apple Classroom of Tomorrow (ACOT) project confirm the one-to-five ratio as effective. Computers are often concentrated in labs instead of in each teacher's classroom, while Internet connections may be limited to certain designated computers. Internet connectivity with four or more computers was found to be an important factor in predicting whether teachers directed student research involving the Internet (Sivin-Kachala and Bialo 2000). School administrators should ensure that adequate numbers of classroom computers with Internet connections are available to teachers and students, and that access times are sufficient. Researchers have argued that if students are to use computers to be better writers, researchers, and problem solvers, they need to have access to computers when and where they are engaged in these processes.

Jamie McKenzie, a leading observer of computer use in schools, suggests that saturating schools and

classrooms with computers is not necessary (2003). Instead of spreading computers thinly across a building so all teachers have the same number of computers, he argues the most enthusiastic and competent teachers should have the best access. He advocates strategic deployment, placing computers where they are most likely to be used, and moving computers to students rather than students to computers. McKenzie suggests “flotillas” of wireless laptops housed in a mobile cabinet, or computers on wheels (COWs), as two methods to accomplish this. He makes a strong argument for sharing resources through “just-in-time” computing, taking computing resources to a room as needed and removing them for use elsewhere as lessons warrant.

Finally, school administrators and school boards need to consider technology’s total cost of ownership (TCO). They often make the mistake of spending most or all of their technology funds on initial purchases of software and hardware, and overlook the longer-term costs of replacing, maintaining, and supporting computer equipment. Unlike many items purchased for schools, such as library books or physical education equipment, computer hardware, software and peripherals quickly become obsolete. In some schools, printers sit idle because money was not budgeted to replace ink cartridges, toner, or paper. Total cost of ownership should be built into school budgets on an ongoing basis.

TECHNICAL AND INSTRUCTIONAL SUPPORT

Even schools that are well equipped often fall short in providing a convenient and reliable support structure. When teachers are trying to use technology in their classrooms and encounter difficulty, they need immediate help and support. Teachers will return to more traditional forms of instruction if the problems they face cannot be solved quickly and efficiently. Teachers, students and staff need on-site technical support personnel and classroom technology specialists who are responsible for troubleshooting and assistance after the technology and lessons are in place. In a paper discussing the cost, utility, and value of technology, Ellen Wahl (2000) suggests that organizations should spend 30 percent of their budget on equipment and 70 percent on the “human infrastructure” to support ongoing training and technical assis-

tance. Most experts agree that at least 30 percent of a technology budget should be spent on professional development and direct support (U.S. Department of Education 1996). Schools today generally spend less than 10 percent of their budgets in these areas.

LEADERSHIP

Fully implementing a well-designed technology plan requires active involvement of school administrators and leaders. Administrators’ roles in promoting technology integration are primarily related to two factors: modeling and support. One of the most effective ways school administrators can promote technology use is be knowledgeable and effective users of technology themselves. Examples include using email for staff communications such as meeting announcements and minutes. Attendance, grading, and student reporting systems can be computerized. However, careful choices must be made to insure the system chosen is intuitive, practical, and reliable. Also, staff members are more apt to use technology if administrators feel strongly about technology use for legitimate reasons, not merely because they desire to “keep up” with neighboring schools or districts.

Support includes encouraging teachers’ curiosity about what can be done using technology, offering incentives for teachers to attend workshops and conferences, and personal participation in professional development activities to learn firsthand how technology is used and what problems are experienced. School leaders can also foster technology integration by providing time for teachers for planning, collaboration, and implementation of technology-based activities. In general, technology integration is highest in buildings in which the principal is involved and excited about technology, and is lowest in buildings in which the principal doesn’t demonstrate technology use even though he or she encourages others to use it. Modeling and supporting technology use are key if administrators want more teachers to take an active role in applying technology to teaching and learning.

THE INSTITUTIONALIZATION OF TECHNOLOGY

The five conditions mentioned above are present in varying degrees in successful examples of technol-

ogy integration in education. One important conclusion that can be reached is that there is no one formula for a successful innovation effort. Local settings and participants greatly influence the eventual use or disuse of a given technology. The ultimate test of a successful innovation is that it becomes routinely used by those in a given setting, a step called institutionalization. Institutionalization takes place when the innovation forms an integral part of the structure of an organization and changes that organization in a stable way. Though schools and their stakeholders have made much progress on technology integration, they are still some way from making technology an integral and stable part of the learning process.

Andrew J. Brovey and Daniel J. Brovey

NETWORKS AND NETWORKING

NETWORK COMPONENTS

Computer networks are having a tremendous impact on the ways individuals, groups, and organizations connect, communicate, and collaborate. In education, computer networks provide an infrastructure for students, teachers, and schools to explore many new approaches to teaching and learning.

Networks are collections of two or more connected computers. When their computers are joined in a network, people can share files, and peripherals such as modems and printers. In a typical network, one computer will act as a server, a central storage device for files or programs shared over the network. Servers also provide connections to shared peripherals such as printers, and to systemwide resources such as email. Having a dedicated server provides a central point for management tasks such as program upgrades and file backup. The computers that connect to the server are called clients or workstations, and they may have additional software on their individual hard drives. You don't need to have a dedicated server in your network. With only a few computers to connect, networking can be "peer-to-peer." This peer-to-peer network can be used to send email, exchange files, and even use printers con-

nected to just one of the computers. However, when more than a few computers need to share resources, a central server and related networking hardware help to manage the connections, speeding the flow of information and communications.

Computers on a network also require a network interface card (NIC) or network adapter, a device that lets the computer talk to the network. These NICs or adapters are usually installed inside a computer's case. With laptop and notebook computers, the NIC is usually a credit card-sized PC card, which is installed in an external slot, though some models have internal cards. A connection medium, usually a wire or cable, links the devices. Networks use three primary types of cabling: Twisted-pair—Category 5 cable (also called 10BaseT), is the current industry standard in new installations. Coaxial cable, used less frequently, resembles round cable TV wiring. Fiber-optic cable is usually reserved for high-speed connections between "backbone" devices in larger networks, and to connect subnetworks between adjacent buildings or around a campus. Fiber-optic cable is the most reliable and has the highest bandwidth, or carrying capacity, but is also the most expensive.

There are two basic types of networks: Local-Area Networks (LANs) and Wide-Area Networks (WANs). A Local-Area Network is a network that is confined to a relatively small area. LANs accommodate local users and are generally limited to a single room such as a writing lab, a school wing, or a school building. Multiple schools in a district, or several districts within a geographical area may be connected over a WAN. Most schools and campuses gain access to the Internet through some type of remote connection, that is, through an intermediary service. "Remote access" refers to a simple connection, usually dialed up over telephone lines as needed, between an individual user or small office and a central network. Multiple users within a school system or campus generally rely on a device called a router to connect to the ISP, or Internet Service Provider, who then connects the campus to the Internet. In general, LAN speeds are much greater than WAN and remote access speeds.

Like the individual computers on the network that need a software operating system (OS), such as Windows or the Macintosh OS, to work, networks also require a network operating system (NOS) to man-

age network related tasks. Networks also require a protocol for the physical method of cabling that connects devices as well as the standards managing the digital transmissions that make up network traffic. The protocol known as Ethernet is the most popular and most widely deployed network technology in the world. Networks also use electronic devices called hubs or switches to act as centralized signal distribution points between groups of computers that make up the local area network.

WIRELESS NETWORKS

Wireless networking is based on radio transmissions, much like portable phones in the home and cellular telephones for traveling. Early wireless LANs were expensive and relatively slow. The arrival of the 11 Mbps 802.11b standard in late 1999, pioneered by Apple in the easy-to-use AirPort product, was a turning point. This standard and the availability of off-the-shelf chip sets quickly reduced costs. Beginning in 2000, the significantly lower prices, and the wide adoption of standards made the use of wireless networking in classrooms attractive to education. The 802.11b and the newer, faster 802.11g standards allow intercommunication between devices from different manufacturers. Much of the recent burgeoning growth in wireless computer networking can be traced to these two standards. The 802.11b allows several concurrent users to share the bandwidth. It is possible to have twenty to thirty concurrent users, but access speeds may be unsatisfactory unless students are on low bandwidth tasks. The 802.11b, the most common specification, has a top speed of 11 megabits per second (Mbps). The higher speed 54 Mbps products using 802.11g provide higher bandwidths, which means a larger number of concurrent users can comfortably share the signal. You can split the 54Mbps more times than you can split the 11Mbps. The 802.11g is fast becoming the choice for wireless computer networking.

Wireless LAN connections require two different devices. The first is a wireless access point. The access point requires both electrical power and a direct connection to the wired network. About the size of a paperback and sporting a small antenna, it serves as the interface between the wired network and the wireless device, most often a portable computer. This access point acts much like the base station for your

portable phone at home, with the phone base station being the access point to the wired telephone system in your house. The portable computer requires a credit-card sized, wireless PC card to connect to the wireless access point. Internal wireless cards are found in the Macintosh iBooks and Powerbooks, and Centrino notebooks. The growing demand for wireless networking has resulted in Windows-based laptop manufacturers offering better wireless options. Internal cards in laptop and notebook computers typically connect to an antenna built into the notebook lid. When the laptop lid is raised, the higher and wider internal antenna often provides better range than a protruding aerial on a PC card. Though much less common, desktop computers and other devices such as PDAs (personal digital assistants) may also link up wirelessly through the addition of adapter cards. Numerous computers can connect to a single access point but they share the available bandwidth of that device. Access points can transmit up to one hundred meters, though a typical reliable range is generally less than half that, given the obstructions present in typical buildings. Multiple access points allow the user to roam over greater areas, transferring signals from one access point to the next, much like roaming with a cell phone between transmission towers.

Maximum network flexibility is gained by using laptop or notebook computers. Each portable computer can access network software, printers, the World Wide Web, email and other network resources from anywhere within range of the wireless signal. Laptop users can do low bandwidth tasks and stay completely mobile. An average user requires low bandwidth most of the time and wireless networks cope well with low to moderate bandwidth tasks such as those mentioned above. However, for fast access with high bandwidth a wired network connection is necessary. High bandwidth tasks include viewing video files, working with large graphics files, and data-intensive simulations. Such tasks currently are best done on computers physically plugged into the LAN. Very high bandwidth tasks such as video editing are best done on local workstation hard drives or with high speed external drives connected to the workstation.

Installing a wireless network is less expensive than installing a wired network, since much less physical labor is involved in running wires and cables. However, wireless access cards and access points add to

the cost, and situating access points to ensure reliable coverage of a given area is challenging. In addition, wireless networks do not generally offer the speed or reliability of wired LANs. Many portable telephones and essentially all microwave ovens work at the same frequency (2.4 Gigahertz), and interference is a possibility. As wireless networks proliferate, interference from another nearby network may occur, though multiple channels are available. Security is a significant concern, because the wireless radio transmissions can be intercepted or rogue users can access network files and data that are not protected. Protections include barriers such as password or device authorization, and encrypting data transmissions. As with other networking technologies, deployment of wireless networking involves a considerable amount of work on the part of technology coordinators, network managers, and support staff. New management tasks range from the security concerns described above to maintaining and scheduling the use of mobile laptop computer labs. Currently, wireless computer networks are best suited for those areas or situations that are too costly or too difficult to wire, or where multiple users require temporary network access.

ADVANTAGES AND DISADVANTAGES OF A SCHOOL NETWORK

Information and Resource Sharing

The primary advantage of LANs is the ability to share resources. This can include network-wide access to software and hardware, file sharing by multiple parties, and centralized information databases. Examples include:

1. Students collaborating on a class project accessing their collective report from different computers at different times.
2. Teacher and student access to large collections of multimedia elements such as graphics, sound and video, which would otherwise consume huge amounts of disk space on each individual workstation.
3. Access to school records, administrative, and informational databases.
4. Inter-school, district-wide, and inter-district notifications or announcements.
5. Electronic attendance and grading, updated by teachers from their desktop workstations.
6. Access to class agenda, class assignments, and shared information on the server, accessible from home or on campus.

Enhanced Communication

Email enhances personal and professional communication for all school personnel, and it facilitates the dissemination of general information to the entire school staff. Email and Internet-based discussion areas can foster communication with home-based students, students and teachers at other schools, and individuals outside the classroom or school. With computer networks, you can connect remotely to library catalogs at your own library-media center or to libraries worldwide. A LAN lets you access software shared among your school's workstations, and network connections to the Internet allow you to sample and even download software developed around the world. These same connections can support distance learning and desktop videoconferencing. Parents and caregivers can electronically interact with the teacher on student progress, homework assignments, and other school activities. Web page creation and dissemination informs the community of school activities and programs. Teachers and schools can encourage widespread participation in learning by creating web homepages allowing access to lessons and tutorials for the entire community. LANs also connect different models of workstations and workstations from various vendors, such as Apple Macintosh or IBM-compatible computers, allowing them to communicate with one another.

Peripheral Sharing

If devices such as printers and fax machines are added to a network, they can be shared by many users. Individual workstations located physically apart in a classroom, lab, and library can share expensive equipment connected to the network, such as a color printer for graphics production. Speed-Networks provide a quick and easy method for sharing and transferring files between computers. Without a network, files are shared by copying them to diskettes or recordable CDs, then hand

carrying the disks from one computer to another. Dedicated lines and sophisticated switching equipment route data traffic much more efficiently.

Cost

Networkable versions of many popular software programs are available at considerable savings when compared to buying individually licensed copies. This eliminates the need to spend time and energy installing updates and tracking files on independent computers throughout the building.

Security

Access to files and programs on a network can be managed and controlled, reducing or eliminating illegal copying of programs. Passwords for specific server-based resources or directories restrict access to authorized users.

Freedom

Wireless networks offer many of the same advantages as wired networks, with the additional benefit of roaming free of wires and cables.

Disadvantages of a school network include the costs to install and maintain the network. Although a network will likely generate a significant return on investment, the initial installation costs are high. Cabling, network devices, and network operating systems are expensive, the installation requires routing and confirming connections, and the services of a technician are required. Proper maintenance and security of a network requires considerable time and expertise. A full-time network administrator is often needed.

NETWORKING IN EDUCATION TODAY

Networked computers now offer teachers and students access to vast information sources local and global, and connections to other members of the learning community near and far. The additional wiring and cabling needed for networks has often hampered the use of equipment and led to placement restrictions and inflexibility. The arrival of high performance, wireless notebook computers can help to eliminate many of the obstacles and

inconveniences that have hindered school technology integration in the past. Making learning resources and contacts available anywhere and anytime via wireless technologies is a natural extension of the educational applications of computer networks.

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TECHNOLOGY-ASSISTED PROJECT-BASED LEARNING (TA-PBL)

Students are engaged in technology-assisted project-based learning (TA-PBL) when they are trying to solve a problem or complete a task using information technology tools. The problems or tasks are guided by authentic issues that are central to the disciplines. Authentic questions drive the process of project-based learning. Researchers agree that “teachers and curriculum developers should work to help students define one or more guiding questions for their work and that curriculum should be driven by conceptually appropriate questions and offer a suitable degree of complexity to sustain the inquiry” (Feldman, Konold, and Coulter 1999). Other experts put it this way: “You cannot think well about a topic or question unless you have information, data, and facts. However, that information should be acquired not for its own sake but as a means of finding answers to a consequential question” (Gardner 1999). Papert suggested that powerful domains of knowledge are found in every discipline and that these powerful ideas can generate questions for investigation that are rich in connections and give rise to explosions of learning. (1999, 104).

In addition to authentic, curriculum-related questions, TA-PBL is a collaborative endeavor, requiring teams of students to work together and build on each other’s strengths (intelligences). A third requirement of TA-PBL is the production of some artifact or performance that is shared with an audience beyond the teacher or class. Artifacts provide external evidence of learning beyond writing a paper or taking a test. Examples include the making of physical models, designing a multimedia project, website, or WebQuest; producing a radio or television script or

a sample newsletter; or writing a play or poem. Seymour Papert called product production of this sort “constructionism,” i.e. the construction of some visible product that can be discussed, examined, probed, criticized, or admired. These product “outside, in the world” can give observers some insights about what is happening “inside the head” (p. 142).

Every TA-PBL needs authentic assessment; there is both peer and teacher feedback in all stages of a project (formative evaluation). Student- and teacher-designed rubrics are an essential part of TA-PBL summative evaluation. Rubrics are scoring tools composed of a list of criteria that indicate what dimensions are deemed important for the evaluation of any given project. Rubrics include varying levels of possible achievement for each criterion. Usually there are six levels with a set of three levels reflecting less than satisfactory accomplishment of a given criterion (no understanding, little understanding, or developing understanding) and three levels reflecting satisfactory accomplishment of any given criterion (capable, strong, exceptional understanding).

Appropriate digital technologies are assumed to be used in the planning, development, implementation, and evaluation phases of TA-PBL.

SAMPLING TA-PBL

Examples of TA-PBL can be found in a number of recent books, magazine articles, and websites. The following are some of the earliest examples:

1. Newspaper PBL: Teams produce an historical newspaper for a particular date from a particular city. The newspaper contains genuine local and regional news as well as reviews of sports, music, the arts, and science.
2. Greeting Card or Holiday Newsletter PBL: Teams design and mail out holiday cards or holiday newsletters reflecting celebrations in different cultures.
3. Redesigning space PBL: Teams use architectural engineering principles to redesign an existing space. The design includes lighting, heating, and airconditioning considerations as well as wall and floor covering components.
4. Fitness-Exercise-Nutrition PBL: Teams provide a profile of existing health features for the class, and a plan to improve them. Teams develop a mechanism for monitoring progress of the health features of the class.
5. Natural Environment PBL: Teams produce a natural history media production of a natural environment study site. The production will contain an audio and video documentation of the site’s natural and social science components.
6. Mall-monitoring PBL: Teams produce an economic report of men and women’s clothing found in a typical shopping mall. For each piece of apparel, the report contains cost, country of origin, and material composition. Teams produce an associated map that shows each country’s contribution to the clothing industry.
7. Opinion Survey PBL: Teams design surveys to collect social science data and design spreadsheets to analyze the collected data.

Selected WebQuests and Web Inquiry Projects (WIPs) are also examples of TA-PBL because they have the following characteristics: Webquests and WIPs use technology, mostly web-based resources, to answer an authentic question or solve an authentic problem. Teams of students collect and analyze data, create artifacts, and present their findings to others. Rubrics are often part of the assessment.

A series of ongoing web projects also reflect the essential features of TA-PBL. The distinguishing characteristic of these ongoing projects is a focus on real data, frequently accessed in real time. The Globe and Jason Projects are multiyear programs involving classrooms from around the world that interact with scientists and with each other. Earlier programs of this type included the National Geographic KidsNet project and the Global Laboratory Network, both sponsored by TERC.

A number of ongoing web projects serve as the core of activities reflected in TA-PBL. The WhaleNet site provides the opportunity for students to collect and analyze data from satellite tags placed on a variety of marine animals including Loggerhead turtles, Harp, Gray, and Harbor seals, and a variety of whales. The site describes its activities:

WhaleNet establishes Internet communications amongst students, researchers, and educators from around the world to share and use actual

research data and personal field experiences for collaborative learning; to foster interdisciplinary education and environmental awareness; and to enhance interest in science and mathematics. WhaleNet uses telecommunications to offer students and teachers a source of data and information for interdisciplinary classroom lessons, curriculum resources, and interactive support. (www.WhaleNet.org)

PROJECT-BASED LEARNING AND PROBLEM-BASED LEARNING

Project-based learning and problem-based learning are terms used to describe conceptually similar instructional strategies. The literature on project-based and problem-based learning reveals both similarities and differences between the two.

Some similarities: Project-based learning and problem-based learning activities are intended to engage students in authentic, “real world” tasks. Both approaches are defined as student-centered, with the teacher in the role of facilitator. Students generally work in cooperative groups for extended periods of time. Both of these approaches include an emphasis on authentic, performance-based assessment.

Some differences: Project-based learning typically begins with an end product in mind. The product requires specific content knowledge, varies widely in scope and time frame, and varies widely in the level of technology used. The entire experience is meant to be authentic, mirroring real world activities and approaches to accomplish the tasks. The end product is the driving force in project-based learning, but it is the content knowledge and skills acquired during the production process that are important to the success of the project approach.

Problem-based learning begins with a problem for students to solve or learn more about. Problems are often framed as scenarios or case studies designed to imitate the complexity of real life. Inquiry and research (rather than the end product) is the primary focus of problem-based learning. After students are presented with a problem, they organize any previous knowledge on the subject, pose additional questions, identify areas they need more information, devise a plan for gathering more information, do the necessary research, and reconvene to share and summarize their new knowledge and present their conclusions. There may or may

not be an end product. See the multimedia project at <http://pblmm.k12.ca.us/PBLGuide/PBL&PBL.htm>.

THEORETICAL SUPPORT FOR TA-PBL

Moursund (1999) provides a case for TA-PBL by examining current theoretical learning positions, observations aligned with accepted educational goals, and research into human intelligence. The major theoretical learning positions include constructivism, situated learning, motivation theory, inquiry-based learning, and cooperative learning.

Constructivism suggests that students construct their own knowledge through active, not passive, activity. Situated learning suggests that learning activities should have a genuine context of social interaction. Motivation theory posits that students who are motivated by meaningful experiences (those experiences in which they can find relevancy to themselves) will learn more and remember it better. Inquiry-based learning centers on questioning and systematic investigation. TA-PBL provides the context for this type of learning. Cooperative learning results from training students how to work in groups, monitoring their group efforts, and reflecting on ways to make the group enterprise work better. Cooperative learning is effective in improving the academic and social skills inherent in TA-PBL.

Accepted educational goals include learning how to carry out complex interdisciplinary projects; acquiring, understanding, and actively using acquired knowledge and skills; mirroring the steps of process writing; and meeting the content and technology standards of the profession.

Research into human intelligence centers on the work of Howard Gardner, Robert Sternberg, and David Perkins. Gardner argues that people have eight or more different kinds of intelligences generally aligned with various academic areas (1993). Gardner’s work would suggest that curriculum (TA-PBL) should try to enhance each of them. Sternberg posits that people have three general types of intelligence—practical, experiential, and componential (1997). He also suggests that TA-PBL provides an opportunity to enhance all three types. Perkins suggests that TA-PBL can increase the efficiency of neu-

ral intelligence and provide opportunities for the enhancement of experiential and reflective intelligence (1992).

RESEARCH ON PROJECT-BASED LEARNING

A combination of testimonial and empirical research provides a composite view of the benefits or effectiveness of TA-PBL. Students show an increase in motivation and problem-solving ability, improved attitude towards learning, improved library research and resource-management skills, and ability to collaborate and cooperate on tasks with no disadvantage in knowledge acquisition. Using TA-PBL, students perform as well on standardized tests as students in traditional classrooms and teachers as well as parents recognize a greater enthusiasm among students participating in TA-PBL.

CRITICISM OF TA-PBL

The activities inherent in TA-PBL must involve serious work in the minds of the students. Content must never be shallow or activities artificial. Content and concepts from the disciplines must be used as the means to establish interest. The most common mistakes noted in TA-PBL lessons include trivializing or sensationalizing topics; making the whole point of an activity an examination of oneself; performing skits or theatrics of serious work; or engaging in events too complex.

IMPROVING TA-PBL

A recent yearlong case study of using a five-part TA-PBL process in an eighth-grade mathematics class provides some insights into the strengths and weaknesses of this instructional approach (McGrath, Viner, and Sylvester 2003). The first two of the five projects were used to learn specific software (Hyperstudio and STELLA) as well as mathematical concepts. The latter three projects followed the traditional steps of TA-PBL in that students, assisted by technology, worked in teams to answer a specific task, generated artifacts of their learning, and presented their results to various audiences. A summary of recommendations and suggestions regarding the improvement of TA-PBL based on this

and other research would focus on the adjustments that teachers should be prepared to make for the factors of time, interpersonal relationships, and student engagement.

With respect to time, if too many class members got stuck on one part of the project, the instructor should move the class to another part of the project and return to the challenging part at a later time. If the project represents new learning and not reinforcement, then students must be given the additional time they need to finish the project. Use many intermediate “deadlines” for finishing intermediate parts of the project.

Interpersonal relationships can be proactively strengthened by choosing strong-willed students to work with similar students, weaker-willed students to work with similar students, and loners to work singly. Instructors must get to know the work habits of their students before they engage in group selections. Change groups as often as necessary.

Regarding engagement, the researchers suggest that if the project isn’t engaging to the students, change the project or change your expectations. Expect more engagement from students as they become more comfortable with the TA-PBL approach. Pre-learning activities are essential. In addition to learning how to use new hardware and software, students must be taught how to do a project, to work as teams, to deal with peer evaluation, to participate in the creation of rubrics, and to examine good and bad examples of finished products.

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TEACHING AND LEARNING: THE WORLD WIDE WEB

The World Wide Web holds great promise for the enhancement of teaching and learning in twenty-first century classrooms. Educators and students have access to more information than at any other time in history. The WWW has made it possible to communicate with distant classrooms across the globe and experts in just about any field. Educators and students can find raw scientific data, census statistics, and historical primary sources that, not long ago, would have been nearly impossible for the av-

erage person to access. The challenge for educators is to find worthwhile ways for students to use this information. Like any other educational tool, the mere presence of the WWW in a classroom does not guarantee that learning will take place; it is how the WWW is used within the context of the classroom curriculum that is most important.

THE WWW AND ITS EFFECTS ON LEARNING

As educators have become increasingly aware of the multitude of educational resources available on the World Wide Web, many are using it as an educational tool. Many educators, especially those who define learning as an active, learner-centered process, view the WWW as an ideal learning environment. However, there is some question as to the Web's role in the learning process.

Long before the WWW became a ubiquitous part of society, researchers began to debate the merits of using multimedia artifacts in the classroom. As a multimedia tool bringing together various combinations of text, graphics, animations, sound, and video, the WWW has become part of the debate over whether media affects learning. On one side of the debate it is believed that there is a link between the type of media used with learners and their level of cognitive processing. Robert Kozma (1994) believes that the specific attributes of a chosen media can aid the learner. The nonlinear setup of the WWW is a unique attribute that allows learners to choose their own learning paths. On the other side of the debate it is believed that media itself has no effect on cognitive processing; it is the accompanying method used along with the media that makes the difference in learning (Clark 1983, 1994). In doing a review of meta-analyses of media effects on learning, Richard Clark (1983) found evidence that there was no significant difference in learning benefits from any one type of media. What was significant was the method used in conjunction with the media.

When it comes to using the WWW in the classroom, many educators find themselves drawing from both sides of the media debate, combining the best the Web has to offer with interesting, well-designed activities that support classroom curriculum. As a relatively new kind of media, the World Wide Web offers a wealth of resources, which include hypermedia, audio, video, graphics, real-time data,

and primary source documents. Simply browsing through these documents affords students little educational value. However, integrating the use of these media attributes with purposeful tasks designed to make use of students' higher level thinking may have a positive impact on learning. David Jonassen (1993) conducted three studies on the use of hypertext environments for learning and found that merely retrieving information from the WWW did not result in meaningful learning. However, giving students a specific task and a clear purpose resulted in a deeper processing of information. In other words, while having access to information is important, it is not enough; educators must find meaningful ways for students to use the information. David Shenk (1997) refers to organizing information and presenting it clearly so that students can use its bits and pieces to construct knowledge of their own. Information itself is useless unless it is presented clearly and used thoughtfully. Judy Harris (1998), Bernie Dodge and Tom March (1995), and Philip Molebash (2002) have all developed ways to effectively utilize the best of the WWW within education.

ACTIVITY STRUCTURES

Harris (1998) describes the use of three broad categories of activity structures for utilizing the WWW effectively with students.

Interpersonal Exchange activities involve using the WWW's communication features such as email and discussion forums for exchanging information with peers, distant classrooms, or experts in a specific field. *Information Collection and Analysis activities* involve collecting, sharing, and sometimes pooling information with other classrooms. *Problem Solving activities* are often authentic, real-world activities that require devising a solution to a problem based on data previously collected.

The key to developing a worthwhile activity using the WWW is to decide on a topic that fits into the classroom curriculum, search the WWW for appropriate resources, and identify objectives to be accomplished by using the activity. Teachers must first critically analyze each website to be used and then decide on the structure of the activity. Judi Harris's website, Virtual Architecture, (<http://virtual-architecture.wm.edu/index.html>) describes each activity structure in detail, giving examples and web addresses.

WEBQUESTS

Like activity structures, the WebQuest format was developed to take advantage of the very best of the WWW without exposing students to some of its negative parts. In "Some Thoughts About WebQuests," (1995) Dodge and March describe the WebQuest format as "an inquiry-oriented activity in which most or all of the information used by learners is drawn from the Web. WebQuests are designed to use learners' time well, to focus on using information rather than looking for it, and to support learners' thinking at the levels of analysis, synthesis, and evaluation." (Dodge and March 1995)

The WebQuest has become an educational phenomenon. A simple search using the term "WebQuest" on popular search engines such as Google or Yahoo, turns up hundreds of thousands of websites with WebQuest in the title. Many teachers have embraced the idea of having their students use the best of the Web within a well-designed framework, so a good number of these websites are teacher created WebQuests. However, many of these quests are lacking the critical components of the original WebQuest idea, which makes them nothing more than Internet treasure hunts. At a very basic level, the WebQuest is made up of the following six components:

1. *Introduction:* The introduction is intended to set the stage and motivate students to begin thinking about the subject the teacher has identified. The best introductions are creatively written and pull the students in, often basing the WebQuest on real world events or issues.
2. *Task:* The task is an important part of the WebQuest. It defines the purpose for using the WebQuest and informs the student what the end result of the WebQuest will be. It is intended to be more than a retrieval of factual information and should require students to use critical thinking in order to accomplish the task. Dodge (2002) has identified several categories that WebQuest tasks could fall under: compilation tasks, mystery tasks, journalistic tasks, design tasks, creative product tasks, consensus-building tasks, persuasion tasks, self-knowledge tasks, analytical tasks, judgment tasks, and scientific tasks. Most WebQuests will utilize a combination of two

or more kinds of tasks that will require critical thinking on the part of the students.

3. *Process:* The process is where the teacher is able to provide some scaffolding for the students by laying out the steps required to accomplish the tasks. Included in the process are how the students will be grouped and which roles are responsible for specific tasks. Graphic organizers may be used.
4. *Resources:* The resources are usually included as part of the process. Evaluating a site for its intended audience, author's credentials, content-accuracy of facts, bias, style and functionality, and ease of navigation (Jacobson and Cohen 1996) is essential before including it in a WebQuest. Additionally, a website should offer more than text on a page. It should offer students something unique in the way of real time data, video, primary sources, or museum pieces.
5. *Evaluation:* The evaluation section gives students an overview of how they will be assessed on the task that has been assigned. It is clearly laid out, often in the form of a rubric.
6. *Conclusion:* The conclusion wraps the project up but not too completely. It leaves the door open for further exploration and may plant the seed of an idea for further study.

As the most important parts of the WebQuest, the task, process, and resources must be interesting, clear, easy to follow, and doable. In the process of completing the task or tasks, students must be doing more than searching for answers on a website so that they may fill in the blanks on a worksheet. In a WebQuest, it is the specific method by which all of its components are put into action to foster a higher level of thinking that stands to make a difference in the cognitive processing of the users. The WebQuest page hosted by San Diego State University's Department of Educational Technology (<http://WebQuest.sdsu.edu/>) houses an extensive database of WebQuest examples and training materials for teachers who would like to create their own WebQuests.

WEB INQUIRY PROJECTS

Web Inquiry Projects (WIPs) are lesson plans that promote student inquiry using WWW resources

(Molebash 2002). Like a WebQuest, a WIP makes use of the best information on the WWW, specifically raw, uninterpreted data. However, that is where the similarities end. A WIP is much less structured than a WebQuest. Consisting of the following six stages, its purpose is to provide scaffolding for educators who want to provide authentic inquiry experiences for their students:

1. *Stage 1, The Hook:* In the first stage, students are motivated, or hooked, by an intriguing set of questions presented by the teacher.
2. *Stage 2, The Question:* The question stage follows with students generating questions related to the topic.
3. *Stage 3, The Procedure:* Guided by the teacher, students then proceed to the procedure stage where they begin to set up procedures for investigating their questions.
4. *Stage 4, The Data Investigation:* During the data investigation stage, students begin searching for online data that might help answer their questions. The teacher provides guidance and direction as necessary.
5. *Stage 5, The Analysis:* Students analyze and interpret using tools such as spreadsheets, databases, or concept-mapping software.
6. *Stage 6, The Findings:* Students present results through written reports, presentations, and class discussions.

WIPs can be used within any curriculum area, but they are better suited for use with older students or those who have extensive experience using the WWW. More background information and examples of WIPs can be found on the website maintained by Molebash and hosted by San Diego State University at <http://edweb.sdsu.edu/wip/>.

SKILLS FOR SURVIVING THE INFORMATION AGE

The amount of information we have access to in the twenty-first century is staggering and promises to continue to grow at an exponential rate. Knowing how to filter out the bad or useless information from the valuable information is a lifelong skill for survival in the Information Age. Using the WWW as an educa-

tional tool requires that teachers know how to critically evaluate resources they will be using with students. Activity Structures, WebQuests, and WIPs all require teachers to focus on a curriculum area and search the WWW for resources. While searching for resources, educators should keep the following criteria set forth by Jacobson and Cohen (1996) in mind:

1. *Purpose of the site/intended audience:* Who was the site designed for? Is it age appropriate?
2. *Credentials of the source/author:* Who is the author? Is the author an expert in the field? Is there a way to contact the author? If the author is listed as an organization, is it a reputable organization? This is especially important because of the ease with which anyone can publish a document on the Internet.
3. *Content:* Is the information accurate? Is there any bias shown?
4. *Style:* The style of a website includes such elements as mechanics, grammar, spelling, and ease of navigation throughout the site. The text should be free of errors.
5. *Is it worth it?* In a classroom situation, is the site worth using over more traditional sources of information, such as books, journals, and other hard copy sources? Can the site's information be used to address local, state, or national curriculum standards?

The importance of looking at WWW documents with a critical eye is an essential skill for teachers who plan to use it in their classrooms. It is akin to reviewing trade books or textbooks before using them with students. Students must also learn to look critically at information they find on the WWW. Kathleen Schrock (1995), author of "Kathy Schrock's Guide for Educators," (<http://school.discovery.com/schrockguide/>) has created evaluation surveys for elementary, middle school, and secondary level students. Each survey requires students to look critically at Web resources based on the usability of the site, authorship, and content. For students, the ability to critically analyze the information found on a website will become a necessary skill as our society continues to be inundated with large amounts of information.

The WWW is filled with rich resources that can enhance teaching and learning in any curriculum area. Best practice in the classroom is focused on

students using it in authentic and meaningful ways to access, interpret, and analyze information. Well-designed lessons such as WebQuests, WIPs, and Activity Structures take advantage of the unique attributes of the WWW.

Michelle Fraboni

ACADEMIC STANDARDS AND TECHNOLOGY

An academic standard is a written expression that describes, for each discipline, what students should know and how they should demonstrate that knowledge. Standards expressed in this fashion are called content (what) and performance (how) standards. Many view the publication of *A Nation at Risk* (National Commission on Excellence 1983) as the initiating event of the standards-based education movement. The rationale for standards was straightforward: All the industries that serve the public—building trades, food services, water supplies, and so forth, have strict standards of performance to protect the quality of life. Similarly, schools should have standards in place to protect the quality of their intellectual mission.

In 1989 at the Education Summit in Virginia, then-President George H. W. Bush and the nation's governors agreed on an educational agenda that included this specific standards-based goal: By 2000, American students will leave grades 4, 8, and 12 having demonstrated competency in challenging subject matter including English, science, history, and geography. A variety of national subject-matter organizations proceeded to devise standards for their respective areas. The National Council of Teachers of Mathematics, the American Association for the Advancement of Science, the National Council for the Social Studies, and other organizations all produced standards-based expressions of their respective disciplines. States and local school districts subsequently used these national-organization standards to produce their own versions of a standards-based curriculum. Organizations like Mid-continent Research for Education and Learning (McREL) and

the National Association of State Boards of Education (NASBE) provided clearinghouses of standards-based information and resources to assist local districts in the preparation of their own curriculum. As instructional technology began to permeate the K–12 curriculum, a separate standards-based technology document was created.

TECHNOLOGY STANDARDS: HISTORICAL DEVELOPMENT

The International Society for Technology in Education (ISTE) was responsible for creating the most widely used technology standards in the United States. ISTE is a nonprofit organization with a worldwide membership dedicated to providing leadership by advancing the use of technology in education. ISTE began in 1989 when the International Council for Computers in Education (ICCE) merged with the International Association for Computing in Education (IACE). David Moursund at the University of Oregon founded ICCE in 1979. This organization began publishing *The Computing Teacher*, a periodical formerly called *The Oregon Computer Teacher*. The title of this magazine was subsequently changed to *Learning and Leading with Technology* in May 1995. This publication remains the major magazine devoted to computer-using educators, especially at the K–12 levels as well as those professionals in teacher education. Beginning in the late 1980s, ISTE's organizational committees began work on accreditation and standards. ISTE eventually became the home of the National Educational Technology Standards (NETS) project.

NATIONAL EDUCATIONAL TECHNOLOGY STANDARDS

After a decade of development, ISTE has produced six major standards documents. They include:

1. *National Educational Technology Standards for Students*, (NETS-S) (ISTE 1998). The technology foundation standards for students are divided into six broad categories: basic operations and basic concepts of technology systems; technology issues associated with social, ethical, and human concerns; technology productivity; communications tools; re-

search tools; and problem-solving and decisionmaking tools.

Performance indicators are described for each of these six categories across four different grade levels, PK–2, 3–5, 6–8, and 9–12. An example from each of these grade levels for the basic operations category might include the following: For PK–2, students will be able to use input and output devices to control a variety of technologies; for grades 3–5, students will be able to use common input and output devices, including adaptive devices, to operate a variety of technology devices; for grades 6–8, students will be able to solve routine hardware and software problems related to technology; and for grades 9–12, students will be able to choose appropriate technology to solve particular problems. There are forty performance indicators, ten per grade level, described in the NETS-S document.

2. *NETS for Students—Connecting Curriculum and Technology* (ISTE 2002b). This document provides models for using technology in the classroom. Lesson plans, sequenced by grade level, show the connection between teaching English, Social Studies, Mathematics, Foreign Language, Science, and Language Arts and the technology standards. A variety of multidisciplinary units are also described.
3. *National Educational Standards for Teachers* (NETS-T) (ISTE 2000). Teachers entering classrooms will know a new suite of technology skills summarized in six major standards:
 - a. Teachers will demonstrate a sound understanding of technology operations and technology concepts.
 - b. Teachers will plan, design, and implement effective learning environments supported by technology.
 - c. Teachers will implement curriculum plans that use technology to maximize student learning.
 - d. Teachers will apply technology to facilitate effective assessment and effective evaluation.
 - e. Teachers will apply technology resources to enhance their productivity and to enhance their professional practice.
 - f. Teachers will understand important issues

surrounding the use of technology in PK–12 including social, ethical, legal, and human concerns.

The NETS-T document provides a number of performance indicators for each of the six categories.

4. *NETS for Teachers—Preparing Teachers to Use Technology* (ISTE 2002c). This document was designed for use in teacher-education curriculum classes. The text contains forty learning activities across all subject matter areas. Separate chapters describe staff development, student teaching, assessment, and model strategies.
5. *National Educational Technology Standards for Administrators* (NETS-A) (2002a). The technology foundation standards for administrators are divided into six broad categories for each of three levels of administrators—superintendents, principals, and district program directors. The categories include: leadership and vision; learning and teaching; productivity and professional practice; support, management, and operations; assessment and evaluation; and social, legal, and ethical issues. A variety of performance indicators are given for each administrative class and category.
6. *Making Technology Standards Work for You—A Guide for School Administrators* (Brooks-Young 2002). This document provides superintendents, principals, and district program directors with detailed suggestions for implementing a vision of effective technology use. It includes separate sections on curriculum and instruction, planning, assessment, staff development, and social and legal issues.

INFLUENCE OF TECHNOLOGY STANDARDS ON TEACHER ACCREDITATION

The National Council for the Accreditation of Teacher Education (NCATE) certifies a growing number of teacher preparation programs in the United States. Many states require all of their teacher preparation programs to be certified by NCATE. Other states, such as New York, are in the process of requiring all their teacher education programs to be

certified by the middle of this decade. Proponents of NCATE suggest that NCATE certification is a rigorous process and institutions seek this certification as a way to demonstrate to the public the quality of its graduates' preparation to teach. However, there is little, if any, research to support this claim. ISTE has provided NCATE with the *NETS for Teachers* (2002c). It is the college's responsibility to provide substantive evidence that its graduates can meet all of the technology performance indicators.

INFLUENCE OF TECHNOLOGY STANDARDS ON STATE AND LOCAL CURRICULUM

Over the past decade, many states have established their own comprehensive learning technology standards. By 1999, thirty-five states had passed technology standards for students, and twenty-six had introduced technology standards for certification and recertification of teachers. Many of these states correlate their own curriculum standards with those expressed in ISTE's NETS project. As an example, New York state uses the six categories from the NETS-S document and aligns standards from their Math, Science, and Technology (MST), English Language Arts (ELA), Social Studies (SS), and Career Development and Occupational Studies (CDOS) curriculum guides. As an example, under the category "Technology Research Tools," the NETS performance criteria requires students to use technology tools to process data and report the results. Using the CDOS curriculum guide, New York state correlates this NETS standard with the performance requirement that students use technology to acquire, organize, and communicate information by entering, modifying, retrieving, and storing data (NYSED, See www.emsc.nysed.gov/guides/cdos/).

Other states have developed technology standards from their own perspectives. Wisconsin, for example, examines their "information and technology literacy" standards by grouping them into four content standards: Media and Technology, Information and Inquiry, Independent Learning, and The Learning Community. For each of these content standards and for grade levels 4, 8, and 12, specific performance standards are listed. For example, for grade 4, under Media and Technology, students are expected to develop touch keyboarding techniques using both

hands. (Wisconsin Department of Public Instruction. See www.dpi.state.wi.us)

Some local school districts have also written their own teacher technology standards. For example, Horry County Schools in South Carolina have developed a set of detailed teacher technology proficiencies that lists eleven components of technology literacy and three levels of performance under each level. For example, under Component 6 (All teachers will be proficient users of spreadsheet software as a teaching and learning tool), Level 2, demonstration of proficiency requires the teacher to create, format, and print charts and graphs. (Horry County School District. See www.hcs.k12.sc.us).

National standards, such as those created by the International Society for Technology in Education (ISTE), the state guidelines in New York, and the local Horry County standards offer frameworks for digital literacy. These frameworks include useful descriptions of the technology skills students and teachers should acquire, and offer age-based benchmarks for students' technological achievement. In some cases, standards packages provide teachers with supplemental materials, such as sample lesson plans and a cross-reference with curriculum standards in other subject areas.

ASSESSING TECHNOLOGY STANDARDS

In a standards-based system, the content and performance standards are linked to assessments tied to the standards. However, states and local educational agencies establish various methods of accountability for meeting them. Standards suggest a direction but do not map out a path. While prescriptions for technology skills help to establish objectives for technology use, it is still up to schools and teachers to create the means of reaching those goals. States, districts and schools must ensure technology use is aligned with standards, educational objectives, curriculum and assessment. As the standards, educational objectives, curriculum and assessment evolve, technology use must be modified to support these goals. The lack of alignment is most pronounced in student assessment. There is often a widespread mismatch between technology standards and assessment.

A Boston College study demonstrated that the

methods of evaluating student learning should reflect the tools used in instruction. This study showed that for a student accustomed to writing on a computer, responses written on computer scored substantially higher than those written by hand. As part of the study, students in grades 4, 8, and 10 were given the composition item from the 1999 Massachusetts Comprehensive Assessment System (MCAS) language arts tests and randomly assigned to write their responses on paper or on the computer. All essays were transcribed to computer text so that MCAS raters did not know the mode in which they were written. Results showed that students who composed on computer or mini-word processors scored considerably higher than students who wrote on paper. Out of a total of twenty points, essays composed on computer scored about two points higher than essays written on paper. Based on the 1999 MCAS results, the report states that allowing students the option to write both the MCAS composition item and the four shorter open-ended items on computer would move about 19 percent of fourth graders from the “needs improvement” category into the “proficient” category. In the case of one elementary school, the number of students scoring in the “proficient” category would jump from 35 percent to 60 percent. Overall, the number of students in each grade level performing in the advanced category would double.

Current assessments do not often evaluate achievement that includes the extensive use of technology. This situation is not unusual. The continually evolving nature of standards often means assessment lags behind the creation and implementation of standards. While most states and virtually all school districts administer tests of established standards, it is still rare to find tests that have been systematically aligned to the officially-adopted technology standards.

TECHNOLOGY IN SUPPORT OF STANDARDS

Educational technology also offers tools to improve student achievement and to support accountability frameworks focused on twenty-first century skills. (Missouri Department of Elementary and Secondary Education 2003) Analysis of *Enhancing Missouri's Instructional Networked Teaching Strategies* (eMINTS) compared 2001 and 2002 Missouri As-

essment Program (MAP) results for eMINTS students and non-eMINTS students in the same school building. Each eMINTS classroom was equipped with a teacher's desktop computer and laptop computer, a scanner, a color printer, a digital camera, an interactive white board, a digital projector, and one computer for every two students. All computers have basic productivity software and high-speed Internet connections. A two-year evaluation of eighty-five eMINTS classrooms showed that the students who participated in the program scored consistently higher in every subject area on the state's standardized tests.

The North Central Regional Educational Laboratory (NCREL) Report *Computer-Based Technology and Learning: Evolving Uses and Expectations* (Valdez et al. 2000) finds:

1. Technology offers opportunities for learner control, increased motivation, connections to the real world, and data-driven assessments tied to content standards that, when implemented systemically, enhance student achievement as measured in a variety of ways, including, but not exclusively limited to, standardized achievement tests.

2. Policymakers are demanding greater accountability for technology use, both because of resource expenditures and because research shows that the ability to use technology effectively is now necessary for all lifelong learners.

STANDARDS MOVEMENT ON BALANCE

As the leading reform movement of the 1990s, the standards movement, including the technology standards, has not been without criticism. Some see it as a major drain on resources that are needed for basic materials. Others view it as a burden on those who do not traditionally do well in school. Some compare it to failed efficiency and behavioral objectives movements. Others point out the sheer volume of the effort and see it as overwhelming the teacher in the classroom. Balancing this criticism, however, are continued efforts to link technology integration, student achievement, and school reform to standards-based protocols.

Daniel J. Brovey and Andrew J. Brovey

RESEARCH CONNECTING LEARNING AND TECHNOLOGY USE

Over the past twenty-five years, several hundred research articles have been published about the use of technology in K–12 education. These articles reflect a variety of opinions and conclusions. On one end of the continuum, supporters cite research studies showing the positive impact of technology in the student learning environment. On the other end, critics present arguments that there is little evidence from research to support the claim that the use of technology in classrooms is worthy of the resources required. What is clear is that the research consistently shows that technology per se does not directly improve teaching and learning. A central theme of the research is that computer-based technology, like the more classic classroom tools such as pens and pencils, chalkboards, and the overhead projector, is a means, not an end. Its power lies in how it is used. Yet, unlike traditional instructional technologies, computer technology is both complex and relatively expensive, and less is known about how to fully realize its potential. Research shows that in addition to monetary investments, substantial planning and organization are required if computer-based technology is to enhance student learning. The context in which the technology is employed, the level of planning and integration, and the people involved largely determine technology's impact.

THE USES OF TECHNOLOGY

An examination of studies on the use of technology in classrooms yields two general conclusions. First, though research studies, literature reviews and analyses provide evidence of the positive impact of technology on student learning, the results often address a specific set of learners and conditions. Second, though typical assessments such as standardized tests can gauge student achievement in basic skills, determining technology's impact on other areas of student learning remains a challenge, and results are far less conclusive.

Thomas Reeves (1998b) offers a helpful way of distinguishing different uses of technology, describing learning “from” computers as different than

learning “with” computers. Learning *from* computers occurs when the technology functions essentially as a tutor, structuring the learning process for students. Much drill-and-practice software and many computer-assisted instruction programs, for example, lead students through a series of problems or activities designed to develop their skills and knowledge. In these cases, the technology is an instructional delivery system, directing the students through a learning process. Research shows that having students learn *from* computer-based technology can improve basic skills, particularly in subjects such as mathematics, language arts, writing fluency and science. Such learning is relatively easy to measure with traditional tests of academic achievement.

By contrast, students learn *with* technology when they exert greater control and assume a more active role in their own learning. In this case, students use technology as a tool for problem solving, conceptual development, and critical thinking. For example, students are learning *with* technology when exploring the World Wide Web to carry out a research project and when using e-mail to collaborate with others about their work. The benefits of learning *with* technology tend to be more difficult to measure. Few assessments adequately measure the skills that these kinds of technology enhance, such as critical thinking, other higher-order thinking skills, writing, and problem solving. Rapid changes in technology and the challenge of measuring such outcomes in a working classroom also make outcome assessment difficult.

LONG-TERM RESEARCH

James Kulik (1994) and his colleagues from the University of Michigan have completed numerous meta-analyses over the past twenty years to determine the effectiveness of computer-based instruction on student learning. A meta-analysis is essentially a study of studies, where multiple research study results are systematically and collectively examined to identify common factors. Kulik's work showed that students usually learn more, and in less time, in classes with computer-based instruction. Students reported enjoying classes more when they received computer help and they learned as much or more from computer-based tutoring as from peer and cross-age tutoring.

Larry Cuban (1986), a professor at Stanford University, has also studied the impact of computers in

classrooms for some twenty years. His work supports research conclusions that drill and tutorial software positively impact student learning. He indicated educators first should determine the goals of the school or district, and then decide how technology can help reach those goals. According to Cuban, it is also necessary to determine what has to change in the current instructional process and school environment in order to integrate technology effectively and insure a positive impact.

The ten-year Apple Classrooms of Tomorrow (ACOT) research project studied the influence of technology rich environments and staff development on teaching and learning among teachers and students. In some phases of the project, two computers were given to each teacher and student in selected classrooms in five schools in different regions of the United States. In another phase of the project, six hundred teachers from fifteen states and two foreign countries participated in training sessions focused on technology integration. ACOT researchers found when technology was integrated into good writing instruction, students were more engaged, wrote more efficiently, and were able to use more descriptive vocabulary than they could without technology. Ninety percent of the ACOT students went on to college as opposed to 15 percent from the rest of the school. The ACOT dropout rate was zero year after year, while for the school as a whole it was 30 percent. Overall attendance was far better for ACOT students than the rest of the student body. ACOT research also documented that students and teachers using technology adopted a more collaborative learning environment. Student engagement remained highest when technology use was integrated into the larger curricular framework, rather than being an “add-on” to an already crowded curriculum. The ACOT project also recommended 30 percent of available technology resources be dedicated to ongoing staff development for teachers.

STUDENTS, TEACHERS, AND TECHNOLOGY

Students, especially those who are disadvantaged, learn basic skills such as reading, writing, and mathematics better and faster if they have a chance to practice those skills using technology. Sophisticated skill-building programs engage students and can

adapt to improving skill levels, and as a result students spend more time on basic learning tasks or progress more quickly than students who use a more traditional approach. According to researchers at the North Central Regional Educational Laboratory (Valdez et al. 2000), computer-based technology used in a tutoring capacity is most effective when there is a match among the software, the objectives of the instruction, students' prerequisite knowledge and skills, and teachers' understanding of the needs of the learners. In general, the success or failure of a technology requires determining where it can have the highest payoff, and then matching the design of the application with the intended purpose and the needs of the end users. Computer applications to improve basic skills are easily linked to learning standards and the increasing need for assessment. Stakeholders and policymakers are demanding greater accountability for technology use, both because of its cost and because the ability to use technology effectively is necessary for lifelong learners. The success or failure of technology-based learning largely depends on the congruence of the software design and the instructional environment surrounding its use.

Technology offers educators a way to individualize curriculum and customize it to the needs of individual students. Students with access to a broad range of technologies can use a variety of media to more clearly express their ideas. Technology can decrease absenteeism, lower dropout rates, and motivate more students to continue on to college. Students who regularly use technology often take more pride in their work, have greater confidence in their abilities, and develop higher levels of self-esteem.

The most pervasive perception among teachers is that computers have improved the climate for learning by increasing student motivation in subjects for which they use computers. Researchers who have examined differences in student perceptions of learning have typically found improvements in students' self-reports of their own motivation and learning in response to computer applications.

In addition to investigating schools and classroom settings, researchers have examined the impact of students' and teachers' use of home computers. Not surprisingly, most have found that home access augments classroom use by teachers and improvements in student achievement. For example, a New Jersey study

examined seventh, eighth, and ninth graders who had sustained access to technology, such as word processing, spreadsheet, email and the Internet, at home and at school. These students did significantly better on standardized writing tests than students who had access to similar technology only at school. In an Indiana study, students who were supplied with home computers and modem access to their school showed improvement in writing, math, and problem solving skills, as well as greater confidence in their own abilities and the ability to teach others. Of course, having a computer at home does not necessarily ensure that students are using the computer in ways that will increase their academic achievement. Like students, teachers can often improve their skills with access to a home computer, but there is no guarantee of this. For example, elementary school teachers in the Apple Classrooms of Tomorrow project did not have time to develop appropriate homework assignments using computers. Consequently, in later years, the project continued providing home computers only at the high school site.

A review of research shows that technology can help students develop diverse skills from the basics to higher-order thinking. Technology offers opportunities for learner-control, increased engagement, connections to the real world, and data-driven assessments tied to content standards. Computer-based learning can enhance student success as measured in a variety of ways, including, but not limited to, standardized achievement tests.

Researchers have attributed a variety of benefits to computer-based technology applied to learning. Yet, because measuring such effects is challenging, it has not been easy to assess the value of computer-based technology in education. There are few reliable, valid, and cost-effective assessments for measuring such qualities as student engagement, critical thinking, or the ability to make inferences, synthesize results, or work collaboratively. Furthermore, classrooms are not experimental laboratories where variables can be tightly controlled, and the product life cycle of hardware and software is far shorter than the typical timeline for educational research studies. Thus, it is not surprising that the impact of technology on learning continues to be debated by educators and researchers alike.

Andrew J. Brovey and Daniel J. Brovey

TECHNOLOGY AND SCIENCE TEACHING

The intersection of teaching, science, and information technology invites a new perspective on learning about the natural and social world using modern digital tools. Teaching, for example, can be defined as the creation of learning environments that are interesting from the learner's point of view and connected to some important ideas in the discipline. Science (as a verb) is defined as the collection and analysis of real-world data to get some idea of how the world "works." The newest forms of science-related Information Technology include: Internet websites designed by professional science organizations; Web-based designed resources (e.g., science portals and ongoing science projects); new types of digital science software (e.g., Geographic Information Systems (GIS); and digital science probes (e.g., Microcomputer-Based Laboratory [MBL]). When we teach science using this new generation of digital tools we are creating learner-appropriate environments that use the tools of modern learning technology to collect and analyze data about the natural or social world.

SCIENCE ORGANIZATIONS

The mission of The National Science Teaching Association (NSTA) is "to promote excellence and innovation in science teaching and learning for all." One of NSTA's guiding principles is to serve as the voice for excellence and innovation in science teaching and learning, curriculum and instruction, and assessment. It was founded in 1944 and is the largest organization in the world with a current membership of more than 55,000 persons.

NSTA'S MAJOR SCIENCE-TECHNOLOGY INITIATIVES

SciLinks is an initiative that correlates the pages of science textbooks with resources on the Internet. The links connect users to websites directly related to the lessons in the textbooks. SciLinks icons and codes are placed in the textbook for key science subjects. After logging onto the SciLinks website (<http://>

scilinks.org), students enter the codes and are guided to age-appropriate websites selected by NSTA's subject matter experts. The SciLinks program makes the Internet a powerful and relevant learning tool. It represents a cutting-edge method of assisting teachers, students, and parents in the science teaching and learning process.

NSTA launched an online institute for the professional development of science teachers in January of 2002 (<http://institute.nsta.org>). The institute is a professional development gateway providing educators with course opportunities on a continuing basis. The portal for the institute currently lists six professional affiliates: American Museum of Natural History Seminars on Science; The JASON Academy; Lesley University Science in Education Program; National Teachers Enhancement Network (NTEN); the University of Maryland Life Sciences Program; and the University of Massachusetts Extension Nutrition Education Program.

NSTA publishes four major science magazines covering all instructional levels: *Science and Children* has a focus on K–6; *Science Scope* has a focus on middle-school science activities; *The Science Teacher* has a focus on grades 9–12; and the *Journal of College Science Teaching* has a focus on post-secondary areas. All the magazines contain a large number of technology-enhanced science articles and may be found on their website (<http://nsta.org>).

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

The American Association for the Advancement of Science, (www.aaas.org), is an international non-profit organization dedicated to advancing science around the world.

It was founded in 1848, and serves some 262 affiliated societies and academies of science, serving ten million individuals. As part of its goal to foster education in science and technology for everyone, it has developed a technology initiative called Science Netlinks. Science NetLinks provide a wealth of resources for K-12 science educators, including lesson plans and reviewed Internet resources. At the heart of Science NetLinks are standards-based lesson plans, resources, benchmarks, and tools. These resources incorporate reviewed Internet sites and can be se-

lected according to specific benchmarks and grade ranges. Lessons are tied to at least one learning goal and use research-based instructional strategies that support student learning. The lessons include student-ready materials such as student online worksheets that enable students to engage directly in Internet activities.

INTERNATIONAL SOCIETY FOR TECHNOLOGY IN EDUCATION (ISTE)

ISTE, the International Society for Technology in Education, through its magazine *Learning & Leading with Technology*, publishes a regular monthly column called "In the Curriculum." Many of these articles describe efforts at integrating science with the tools of modern learning technology. Some of these recent technology-enhanced science articles (which may be viewed at www.iste.org) include: "Real NASA Inspiration in a Virtual Space" (Peterson, Starr, and Anderson 2003); "Breeding Mice the Easy Way" (Bell, Yam, and Bell 2003); "Geometry in Space and The Handheld Computer as Field Guide" (Thomas, Emert, and Thomas 2002); "Geography is Everywhere" (Alibrandi 2002), and "El Nino Did It—Using technology to Assess and Predict Climate Trends" (Niess, Bell, and Bell 2001/2002).

TERC

Founded in 1965, TERC is a not-for-profit education research and development organization. It is based in Cambridge, Massachusetts. TERC's mission is to improve mathematics, science, and technology teaching and learning through activities such as: creating curricula and other products in order to better understand learning and teaching; designing and testing exemplary models of professional development; developing applications of new technologies; and supporting school reform through research and technical assistance. By 2002, TERC programs and products reached nearly two million students in all fifty states and eighty-seven countries.

One of TERC's more innovative projects was the National Geographic KidsNet program. In this project, elementary-school children performed investigations on acid rain and water quality and communicated their findings via email with other schools and with scientists. A second Internet-supported ac-

tivity was called the Global Laboratory Network. This project had students collecting and electronically sharing data regarding ozone levels, soil temperature and moisture content, ultraviolet radiation, bird and insect presence, and other “earth” variables. Details on all of these activities can be found on TERC’s website at www.terc.edu.

CONCORD CONSORTIUM

The Concord Consortium is a tax-exempt, non-profit education, research, and development organization. The work of the consortium (www.concord.org/) is rooted in their belief that the appearance of new, emerging technologies has the potential to ignite explosive strides in learning capacity and curriculum development and that by harnessing these technological resources a powerful extension of educational resources can be available to all people, regardless of their circumstances. The Concord Consortium committed itself to developing and using the best in educational technology. As described on their website, a sample of some of the current technology-science projects would include:

- **Data and Models: Weather, Climate, and Global Change**—a project that uses advanced data and simulation technology to help seventh and eighth grade students link data to computer modeling and simulations tools.
- **Making Thinking Visible**—a collaborative project that focuses on developing Web-based materials for middle-school and high-school earth science, specifically plate tectonics.
- **Modeling Across the Curriculum**—a five-year research project to study the impact of computer modeling tools on secondary-level science learning.
- **Molecular Workbench**—a project utilizing atomic-scale models to relate a wide range of macroscopic physical, chemical, and biological phenomena to basic properties of atoms and molecules and their interactions.
- **TEEMSS (Technology Enhanced Elementary and Middle School Science)**—a long-term initiative at the Concord Consortium to infuse computer-based data collection and analysis across the elementary and middle school science curriculum.

CENTER FOR IMPROVED ENGINEERING AND SCIENCE EDUCATION

CIESE is the Center for Improved Engineering and Science Education. It was established in 1988 at Stevens Institute of Technology to help bring the Institute’s technology experience to the K-12 sector. Since 1994, CIESE has developed Internet-based lessons that exploit the unique and compelling aspects of this technology. The lessons focus on the use of real-time data and global telecollaborative projects and engage students in authentic science investigations in which they perform experiments, collect and record real data, and make predictions. In effect, they become real scientists. Through email and other Web-based forums, students communicate and collaborate with other students and scientists around the world. A current list of some of their projects includes: air pollution (a study of ground-level ozone); navigational vectors (tracking plane flights); the stowaway adventure (tracking cargo ships at sea); and the Gulf Stream voyage (an investigation of this large ocean current). (www.k12science.org).

SCIENCE PORTALS

Portals are searchable databases of specialized subjects created for finding verified sources of disciplinary knowledge. The National Science Digital Library (NSDL) is a sample of a portal containing science resources. NSDL is a National Science Foundation (NSF) website (www.nsd.org). NSDL is a digital library of exemplary resource collections and services, organized in support of science education at all levels. NSDL describes itself as an emerging center of innovation in digital libraries as applied to education, and a community center for groups focused on digital-library-enabled science education. It is a comprehensive, online source for science, technology, engineering, and mathematics education. The NSDL defines its mission: to deepen and extend science literacy through access to materials and methods that reveal the nature of the physical universe and the intellectual means by which we discover and understand it. The NSDL offers free science-related resources to the public, including text, graphics, interactive video, links, and other resources pertinent to computing, engineering, global mapping,

physics, mathematics, earth science, paleontology, and more. By 2007, the site will house the largest collection of science-related material available on the Internet, and it will include three subportals (niche portals) that include Using Data in the Classroom, NSDL Educators Portal, and Science Pictures. The digital library opened to the public in December 2002.

ONGOING SCIENCE PROJECTS

GLOBE is one of a number of major Internet-supported science projects (www.globe.gov). It is a worldwide hands-on, primary and secondary school-based science education program. GLOBE began in 1995 and was administered by a federal interagency program supported by the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), the Environmental Protection Agency (EPA) and the U.S. State Department, in partnership with colleges and universities, state and local school systems, and nongovernment organizations.

In 2003, the University Corporation for Atmospheric Research (UCAR), in partnership with Colorado State University (CSU), was officially awarded a Cooperative Agreement from NASA and assumed primary responsibility for the continued development and administration of the GLOBE Program.

Internationally, GLOBE is a partnership between the United States with over one hundred other countries. Over a million primary and secondary students in more than 15,000 schools have taken part in the program and more than 25,000 teachers have been GLOBE-certified. (Teachers and other educators who wish to lead students in GLOBE activities need to attend special workshops in order to fully participate in the program).

For students, GLOBE provides the opportunity to learn in a number of ways. Students, working alone, or in small teams take scientifically valid measurements in the fields of atmosphere, hydrology, soils, land cover, and phenology. They share their data through the Internet. An interactive website allows students to create maps and graphs, analyze data sets, and collaborate with scientists and other GLOBE students around the world.

For teachers, GLOBE provides assistance through professional development workshops. They are given extensive teacher's guides, "how-to" videos, and other materials. Teachers receive support and con-

tact from a Help Desk that includes scientists, and other teachers and partners.

GLOBE-trained teachers help students improve their achievement in science and math and in the use of computer and network technology. Through GLOBE activities, teachers and students achieve state and local education goals and standards and increase student awareness of their environment. GLOBE improves student understanding of science by involving the students in performing real science—taking measurements, analyzing data, and participating in research in collaboration with scientists. Through these activities, GLOBE hopes to expand the number of potential future scientists and researchers.

The JASON Project is an example of a cross-curriculum study that includes elements from the natural and social sciences. Since 1989, JASON Project expeditions have involved students and teachers in current research that have taken their minds and imaginations to some of the most exciting places on Earth—and even to the very outer limits of our solar system. The JASON website at www.jasonproject.org describes some of the projects created and explored over the past fifteen years: The first expedition was called JASON I: The Mediterranean Sea. In May 1989, the JASON Project discovered the first hydrothermal vents in the Mediterranean Sea, examined an ancient Roman shipwreck, and retrieved artifacts from depths of 2,100 feet. The most recent expedition was called JASON XV: Rainforests at the Crossroads. This project engaged students and teachers in an exciting journey of discovery to explore the Isthmus of Panama region and its fascinating tropical rainforests. Project teams explored the unique role the Isthmus of Panama and its tropical rainforests play in furthering the global understanding of the interchange between Earth's dynamic systems. The team focused on the research, monitoring, and management of this region to better understand how it functions and how it changes through time. The team also looked at how human technology has influenced the geography, hydrology, and biology of Panama, and how technology is used to better understand how the world works. Titles of other expeditions in the Jason project include JASON II: The Great Lakes; JASON III: The Galapagos Islands; JASON IV: Baja California Sur; JASON V: Planet Earth; JASON VI: Island Earth; JASON VII: Adapting to a Changing Sea; JASON VIII: Journey from

the Center of the Earth; JASON IX: Oceans of Earth and Beyond; JASON X: Rainforests—A Wet & Wild Adventure; JASON XI: Going to Extremes; JASON XII: Hawaii: A Living Laboratory, Online Expedition: Humpback Whales and Hawaii's Mountain Streams; JASON XIII: Frozen Worlds; and JASON XIV: From Shore to Sea.

SCIENCE SOFTWARE: GEOGRAPHICAL INFORMATION SYSTEM (GIS)

A Geographical Information System (GIS) is dynamic mapping software that links information about where things are with information about what things are like. GIS is also a system for acquiring, presenting, and interacting with spatial data. GIS experts also describe GIS as a system for storing, updating, displaying, analyzing, and manipulating spatial data. GIS is used to answer geographic questions in a variety of formats including maps, charts, and graphs.

A digital map created by GIS will have points that represent features on the map such as cities; lines that represent features such as roads; and polygons that represent features such as lakes. The difference is that this information comes from a database and is shown only if the user chooses to show it. Each piece of information in the map sits on a layer, and the users turn on or off the layers according to their needs. One layer could be made up of all the roads in an area. Another could represent all the lakes in the same area. Yet another could represent all the cities (Environmental Systems Research Institute 1995, 1996).

GIS represents the digital tool most appropriate for helping students meet the six major themes of the national geography standards: the world in spatial terms; places and regions; physical systems; human systems; environment and society; and the uses of geography. A listing of the eighteen geography standards can be found at the National Council for Geographic Education website (www.ncge.org/).

DIGITAL SCIENCE PROBES: MICROCOMPUTER-BASED LABORATORY (MBL)

Digital science probes are used for real-time, computer-based data collection in science and math. A

probeware system is a combination of hardware-interface, probes, and accessories; installed software; and a curriculum specifically designed for probeware experiments. The curriculum is used by teachers and students to conduct experiments that require some type of scientific measurement. These measurements include phenomena such as temperature, light, distance, motion, pH, and force.

In a lab equipped with a desktop or laptop computer, students use the probes to collect and analyze data from science experiments. The data from these measurements is processed by the interface and graphically displayed by the software. Using the software, students instantly see the results of an experiment. Digital probeware is available for use from elementary through college levels in all areas of science including Physical Science, Earth Science, Life Science, Physics, Chemistry, Biology, and Technology. One of the providers of probeware is TeamLabs (www.teamlabs.com).

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INSTRUCTIONAL TECHNOLOGY: THE NEAR FUTURE

The year 2001 marks the beginning of the second twenty-five year period of using modern learning technologies in the classrooms. Innovation in telecommunication technologies, implementation of student and teacher preparation standards, and new roles for the technology-using student and teacher will provide the evolving framework over the next several years.

On the technology-communications side, these trends are worth noting:

1. Rapid evolution of networking.
2. Easier student access to more powerful technology.
3. New ways to search the World Wide Web.

On the changing roles for technology-using students and teachers, there will be a transition from passive to active classroom behavior. Technology-rich experiences across the curriculum will require students

to assume new roles, moving from “fact learners” to designers, collaborators, and worldwide communicators. Teachers will move from information dispensers to interaction developers.

COMPUTER AND COMMUNICATIONS TECHNOLOGIES: ACCESS

New and expanded developments in communication technologies will drive much of the innovation in this decade. In particular, the “transitional new” technologies will include wireless fidelity (Wi-Fi) access to existing networks including the Internet, and low-cost network expansion options. This wireless access uses radio frequency (RF) signals that enable properly equipped computing devices to send and receive data from certain access points, usually within a range of one hundred meters. Wireless access leaves you free to roam with a laptop or handheld computing device while connected to the Internet at high speed, including downloading and printing documents and other files. The wireless standard known as 802.11b already provides untethered network access for many students and teachers, both within and near school buildings. Emerging wireless technologies such as 802.11g offer five times the speed, and WiMax, the promise of improved range, perhaps as far as thirty miles.

Rural communities and schools serving over sixty million people in the United States currently have limited or no access to the Internet. New technologies and initiatives by public agencies and private firms are coming to the aid of those disenfranchised by distance. Satellite access to the Internet, already available to consumers through products such as Directway from DirectTV, utilizes satellite technology to send and receive the Internet to a computer, making it available everywhere in the continental United States. Other firms, with names like WildBlue Communications, are now entering this market, promising lower-cost and higher-speed connections. Similar to efforts in the past to build rural electric and telephone service, the federal government is also stimulating development of rural broadband access. For example, in 2003, the Agriculture Department announced its first major rural broadband effort, including a \$1.5 billion loan program to encourage high-speed Internet deployment. Time and place constraints of formal learn-

ing will be further challenged, and these emerging connection technologies will help bridge the rural digital divide. Communications will include true broadband wireless transmission, permitting seamless reception and transmission of video, sound, and text files. The era of anytime/anywhere access to learning will be at hand.

Peer-to-peer (P2P) networking allows individuals to create ad hoc networks within a local area network (LAN) or across the Net. In 1999, eighteen-year-old college student Shawn Fanning invented Napster as a tool to find and share music files between individual PCs. P2P is used today primarily for swapping digitized music files among millions of PCs (in most cases, illegally). However, this same technology could also be used for exchanging academic content and encouraging collaboration. As Andy Oram (2001), authority on peer-to-peer networks, describes it, “Academic environments are ideal for experimenting with peer-to-peer and benefiting from peer-to-peer. You have an open attitude toward information, well-educated staff who can adapt to new tools, a variety of projects that require information exchange, and a willingness to expend time and effort in order to save money.” With support from the Mellon foundation, researchers at Penn State, MIT, Simon Fraser University, and the Internet2 P2P working group are developing LionShare. The LionShare P2P project is an effort to apply peer-to-peer technologies to an educational environment in support of teaching, learning, and research.

Internet2 is a not-for-profit consortium of over two hundred U.S. universities, over sixty corporations, and some three dozen other organizations, that is developing and deploying advanced network applications and technology, creating tomorrow’s Internet. Although Internet2 is largely a dedicated physical network, it will develop new technologies and capabilities that can then be deployed in the global Internet. The associated Internet2 K20 Initiative aims to bring together as quickly and as connectedly as possible, primary and secondary schools, colleges and universities, libraries, and museums. Their goal is rapid deployment of new technology applications and the content of innovators, from across all educational sectors in the United States. More than a faster Web or improved email, these new technologies will enable completely new applications such as

vast digital libraries, virtual laboratories, and distance-independent, media-rich learning. One such highly sophisticated technology is virtual reality, a computer-controlled environment where users experience sensory immersion and can interact with objects much as they might in the real world. Virtual reality (VR) can also allow people to experience situations not possible in reality, such as visiting an ancient civilization or touring the human circulatory system. One fledgling VR application found in schools today and popular on the Web is the virtual field trip. However, high-performance VR is expensive to develop and relies on highly specialized equipment and network connections. Connections on the Internet2 can run up to 2.4 gigabits per second, about 45,000 times faster than a typical 56K dial-up modem, and one hundred to one thousand times faster than typical broadband connections. Internet2 also solves other limitations of the current Internet. Today, even when research sites have high-speed connections to the Internet, they are dependent on the quality of the intermediate servers and other devices, and the speed of the linked site. Another limitation is the sheer number of users on today's Internet. Once the Internet became commercialized and widely available to the public, increasing numbers of people demanded more and more bandwidth. Burgeoning numbers of cable modems and DSL services are adding to the congestion, as end users now share and download even larger media files. Internet2 has dedicated, data paths used primarily for research purposes, and is not congested by the billions of email messages, music files, and video clips that pass through other connections.

Other transitional new technologies include a shift from keyboard input to handwriting recognition systems. The Apple Macintosh OS X operating system already includes the aptly named application "Ink" for handwriting recognition. When Ink is turned on, you can use a graphics tablet and stylus to print text that the computer recognizes and converts to words. You can write any time you're using your stylus and the computer automatically recognizes what you've written. Microsoft and many laptop computer makers now offer the Tablet PC, the equivalent of an electronic legal pad. Tablet PCs come with a special stylus that you use to "write" on the same screen used for display. The handwriting recognition on the Tablet PC works based on your natural writing, ac-

cepting printing and handwriting. The operating system actually stores the handwriting as a graphic and the converted text in the notepad application. You can go back and forth between the handwriting and the converted text, helpful for items that the recognition software may have misinterpreted. While today's computer handwriting recognition systems are far from perfect, they offer compelling alternatives to keyboarding.

COMMUNICATIONS TECHNOLOGIES: SEARCHES AND GATEWAYS

The Web will continue to be searched with a variety of well-maintained and upgraded generic search engines. The term "search engine" describes both software (crawler-based or spider-based) search engines and human-powered directories. Search engines gather their listings in different ways. The crawler-based search engines create their listings automatically by "crawling" or "spidering" the Web. People search through the listed results. A human-powered directory depends on humans for its listings. A search looks for matches only in the descriptions submitted for the Web page. The Open Directory, formerly called NewHoo, and acquired by AOL Time Warner, is a directory-based search engine. Open Directory (<http://dmoz.org/>) describes itself as the most comprehensive human-edited directory on the Web. Directories are often developed and maintained by a large global community of volunteers.

According to 2003 statistics by SearchEngineWatch (<http://searchenginewatch.com>), four search engines were the most heavily used: Google (www.google.com), Yahoo (www.yahoo.com), MSN Search (<http://search.msn.com>), and AOL Search (<http://aolsearch.aol.com>) (internal) or (<http://search.aol.com/>) (external). Each of these search engines had over five million search hours per month.

In the near future, Web searches will be accomplished by search engines that use artificial intelligence. These intelligent agents will change the information repository of the World Wide Web into a true knowledge machine. Learners of any age or sophistication will be able to make productive inquiries of this worldwide knowledge base. The answers to their inquiries will be delivered in a cognitively and age-appropriate context in a multimedia format that will include text, charts, graphs, sound, and video.

New educational gateways or portals will be developed and existing ones will be expanded. GEMS, for example, is the Gateway to Educational Materials. GEMS is a consortium of more than four hundred organizations and individuals that provide a substantial collection of Internet-based educational materials available on various federal, state, university, non-profit, and commercial Internet sites. GEMS is a project of the U.S. Department of Education, located at the Information Institute of Syracuse at Syracuse University.

The Federal Resources for Educational Excellence (www.ed.gov/free) is a website maintained by the federal government. Over twenty-five federal agencies and organizations contribute to a huge database of information and provide access to a wide range of academic subjects including Arts, Educational technology, Foreign languages, Health and Safety, Language arts, Mathematics, Physical Education, Science, Social Studies, and Vocational education.

CHANGING ROLES FOR TECHNOLOGY-USING TEACHERS AND STUDENTS

According to the National Center for Educational Statistics, by the fall of 2002, virtually all public schools were connected to the Internet, and 92 percent of the instructional rooms in schools had Internet access. The Pew Internet & American Life Project offers additional insights concerning student use of the Internet. More than one in five households with children now have broadband Internet access, most through cable modems and digital subscriber line (DSL) service through their phone company. This broadband access encourages wider use of multimedia resources. Many students don't use the Internet much at school due to poor connections, blocking and filtering software, and restrictions imposed by teachers on what websites they can visit. The same Pew survey found many students use the Internet not only for reference but also for online chat, including seeking direct help from peers with schoolwork. Some 54 percent of schools rely on students for technical support, and 4 percent rely on students for technology training for teachers.

These technology-savvy students, under the guid-

ance of reform-minded teachers, will assume new roles, moving from passive fact learners to active designers, collaborators, and worldwide communicators. Wireless technologies and intelligent agents will allow students to be learners at any time, anywhere.

FORECASTS

Given the widespread impact of digital technology in all sectors of society, and the more thoughtful ways we evaluate its educational effectiveness, computers, the Internet and other digital media will likely bring about more significant and sustainable changes than the technologies that preceded them. These changes will likely include:

1. Students having routine access to more computing power both in the schools and in their homes, using portable wireless devices that connect to computer networks across the globe.
2. Teachers and media specialists evolving from conduits for prefabricated sources to coaches and guides for technology-based, media rich, information repositories.
3. Students as more active and collaborative learners, enjoying wider access to more experienced members of society beyond the classroom.
4. Computers evolving from isolated, desktop machines to more portable, networked devices. Computer networks will not only connect more learners to growing online public resources, they will also increasingly connect one peer to another to share personal conversations and private creations.
5. Technological developments in handwriting and voice recognition will make the student-computer interface more intuitive, efficient, and effective.
6. Developments in computer power will support and strengthen media consolidation and convergence. Information will be accessed and retrieved in new combinations of text, graphics, sound, and video. These new hypermedia products will allow students a more powerful way to interact with search engines and data sources.
7. Teachers will have access to a new suite of integrated classroom management tools, including learning plans tailored to individual students, the digital equivalent of today's individual education programs (IEPs) for special education students. The

prudent use of these tools will permit teachers to create context-appropriate learning environments for all students.

8. Boundaries separating schools from each other, from the home, and from other community agencies will dissolve. Some social-human activities will take place in face-to-face meetings between a teacher and groups of students. Other schooling will be technology-enhanced, including distance learning, digital-supported informal learning, and school-home-library connections.

These educational technology forecasts represent a consensus among experts that schooling, influenced by digital technologies, will continue to change dramatically over the next twenty-five years. All the main components—curriculum, instruction, evaluation, and teacher preparation will be under extreme pressure to adapt to these powerful tools. There is a great need for careful, humane, and strategic planning among all stakeholders in our educational enterprise.

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- Center for Improved Engineering and Science Education: <http://k12science.orgtech.edu/index.html>.
- Concord Consortium: www.concord.org/.
- Consortium for School Networking (CoSN): <http://cosn.org/>
- Education Week On the Web: www.edweek.com/sreports/.
- eMINTS: <http://emints.more.net/evaluation/reports/>
- From Now On: The Educational Technology Journal: <http://optin.iserver.net/fromnow/>.
- GLOBE Project: www.globe.gov.
- How Stuff Works: <http://computer.howstuffworks.com/ethernet.htm>.
- Internet2: www.internet2.edu/.
- ISTE (International Society for Technology in Education): www.iste.org.
- JASON Project: www.jason.org.
- McGrath, Diane, PBL website: <http://coe.ksu.edu/PBL/>.
- McREL (Mid-continent Research for Education and Learning): www.mcrel.org/.
- Milken Exchange on Education Technology: www.milkenexchange.org/.
- Multimedia Project: <http://pblmm.k12.ca.us/PBLGuide/PBL&PBL.htm>.
- NASBE (National Association of State Boards of Education): (<http://www.nasbe.org/>).
- National Council for the Social Studies: www.ncss.org/.
- National Council of Teachers of Mathematics: www.nctm.org/.
- National School Boards Association: Education Technology: www.nsba.org/site/page_micro.asp?TRACKID=&CID=63&DID=195.
- NCGE (National Council for Geographic Education): www.ncge.org/.
- NCREL (North Central Regional Educational Laboratory), NCREL: Technology Integration: www.ncrel.org/tech/qkey3.
- NCREL (North Central Regional Educational Laboratory): www.ncrel.org/tplan/cbtl/toc.htm.
- Networking 101, Networking Basics: <http://compnetworking.about.com/cs/basicnetworking/>.
- Networks for Beginners: www2.rad.com/networks/1997/nettut/mainmenu.html.
- NSDL (National Digital Science Library): www.nsdlib.org.
- NSTA (National Science Teaching Association): www.nsta.org.
- NSTA, Institute: <http://institute.nsta.org>.
- NSTA, SciLinks: www.scilinks.org.
- Open Directory: <http://dmoz.org>.
- Pew Internet & American Life Project: www.pewinternet.org.
- Rubistar: <http://rubistar.4teachers.org/index.php>.
- SearchEngineWatch: <http://searchenginewatch.com>.
- Software & Information Industry Association: www.siiia.net/.
- TeamLabs: www.teamlabs.com
- TERC: www.terc.edu.
- Tom’s Networking: NeedtoKnow Index: www.tomsnetworking.com/NeedToKnows.php.
- Webquest page: <http://webquest.sdsu.edu/taskonomy.html>.
- WhaleNet Site: www.whalenet.org
- WIPs (Web Inquiry Projects): <http://edweb.sdsu.edu/wip/>.

WEBSITE RESOURCES

American Association for the Advancement of Science: www.aaas.org/.

II

PHILOSOPHICAL, SOCIAL, AND POLITICAL ISSUES IN EDUCATION

PHILOSOPHY OF EDUCATION

As a formalized, academic discipline, philosophy of education is quite young. The first course in philosophy of education in the United States may have been Nicholas Murray Butler's (1862–1947) course in the 1890s and 1900s at Columbia University. Butler taught “Principles of Education,” using as textbooks Paul Hanus's (1855–1941) *Educational Aims and Educational Values* (1899) and Harrell Horne's (1874–1946) *Philosophy of Education: Being the Foundations of Education in the Related Natural and Mental Sciences* (1904) (Johnson 1995, 5). It is also during this period that we begin to see the University of Chicago, Clark University, Columbia, and New York University producing doctoral dissertations on topics in philosophy of education. Another important date in the history of the discipline is 1916, when John Dewey (1859–1952) published what has since become the signature work of the field: *Democracy and Education: An Introduction to the Philosophy of Education*. Despite these early benchmarks, though, it was not until 1941 that the Philosophy of Education Society was founded, and not until 1951 that *Educational Theory*, the society's academic journal, was established. Indeed, according to some scholars it was not until the mid-1960s that philosophy of education finally gained a firm foothold in the academy (Blake et al. 2003, 2).

In an important sense, however, it is misleading to think of philosophy of education as a young field. As a domain of inquiry, educational philosophy is as old as philosophy itself. Educational questions are central to the work of founding figures in Western and Eastern philosophy alike. In Plato (427–347 B.C.E.), for instance, we find discussions of what we would now call moral, civic, and vocational education respectively. We find curricular proposals regarding the arts and physical education, inquiries into the nature of teaching and learning, and illustrations

of the educative potential of dialogue and the unique pedagogical approach of Socrates. Similarly, Confucius (551–479 B.C.E.) concerns himself as much with learning and what it means to be a student as he does with righteousness and filial piety.

The point is not to show that we have a long history of applying philosophy to education, but rather that no application was deemed necessary until very recently in intellectual history. For more than two millennia after Plato, educational questions remained central to philosophical inquiry in the West. For thinkers as diverse as Cicero (106–43 B.C.E.), Augustine (354–430), Boethius (480–524), Thomas Aquinas (1224–1274), Erasmus (1469–1536), Giambattista Vico (1668–1744), Jean-Jacques Rousseau (1712–1778), or Friedrich von Schiller (1759–1805) education was not an extraneous topic calling for philosophical afterthoughts, but the very ground of their most important philosophical inquiries. Until recently, it has seemed natural for philosophers to take up questions about knowledge by examining how we come to know; to consider questions about the good life by investigating how one becomes virtuous; to approach the nature of the ideal society through a discussion of how to educate future citizens; and to contemplate human nature by asking what it means about us that teaching and learning are such a fundamental aspects of the human condition.

By the time philosophy joins the ranks of formalized, academic disciplines at the end of the nineteenth century, however, it has undergone a series of significant transformations. It has abandoned its traditional task of articulating and exemplifying a way of life that can guide human conduct in favor of constructing systematic theories (Hadot 1995). Further, it has ceded to the newly emerging social sciences its traditional concern with the developing person and with social practices such as education. Thus, when

philosophy and education are reunited in the modern discipline of philosophy of education, it is in a doubly alienated way. As an applied subfield, philosophy of education is thought to stand at a remove from “pure” philosophy, which in turn is thought to stand at a remove from the practical and the everyday. In order to introduce the reader to the full scope of educational philosophy, then, it will be necessary to survey not only modern scholarship in the field but also a variety of humanistic works which predate the field as such.

Some might wonder why we should concern ourselves with this older tradition even if it does exist. After all, why not simply present the latest research, the state of the art? Though it is doubtful that even the sciences progress in such a linear fashion, this is certainly not the case in the humanities. Humanistic scholarship is closer in form to an ongoing conversation than to a series of experiments and results. Conversations progress, and some conversations are better than others, but it does not make sense to ask for the results of a conversation. The final word in a conversation is no more valuable than the others, all of which are to be judged together on whether they enlarge our understanding, deepen our sympathies, sharpen our perceptions, and improve our judgment. Books such as Plato’s (1992) *Republic* and Rousseau’s (1979) *Emile* cannot become outmoded, only forgotten. As times change, individual aspects of such works may come to strike us as silly or offensive, but as a whole each of these works remains a high point in our attempt to think through imaginatively, systematically, and unflinchingly the nature of education and its place in human life. Texts such as these seldom offer clear answers to our current stock of questions, but they provide an even more valuable service. They help us to see how our current questions fail to get at the heart of the matter. They show us how to ask more interesting, important, and insightful questions.

In this way, philosophy of education differs from much of educational research. Typically, educational research is undertaken with the aim of establishing what works in practice so that these findings may be transmitted to practitioners and policy makers. The point of educational philosophy, in contrast, is to transform those involved in educational policy and practice. It aims to help us to think more deeply about educational questions and more critically about edu-

cational initiatives. Philosophy of education invites educators into the more than 2000-year-old conversation into the nature and purpose of education. This not only helps us to see beyond the confines of current debates, but it reminds us why we care about education in the first place.

ORGANIZATION OF THE CHAPTER

This chapter is divided into four entries, each devoted to a core area of inquiry in philosophy and education, old and new. Two of the entries concern the aims of education and two concern the process of education.

For philosophers of education, the aims of education go beyond curricular goals and even beyond the explicit principles of a school mission statement. Implicit in such goal statements are fundamental notions about individual and collective human flourishing. Thus, discussion of the aims of education falls into two broad categories: educational ethics and social (or political) philosophy of education.

Ethics is the study of what constitutes a life well lived. This includes not only questions of right and wrong, but more broadly it concerns what makes a human life excellent, meaningful, or rich. Since education, however it is conceived, involves helping people develop, educators cannot help but rely on more or less implicit notions of what we ought to be developing into. Philosophy of education seeks to make such ideals of the educated person explicit and to evaluate them in light of rival notions of human flourishing. The first entry reviews some of the major developments in this area with special attention to moral education, that branch of educational ethics that deals specifically with how to cultivate in the young the dispositions and capacities, cognitive and emotional, to treat other people well.

Educational theories and practices are not only animated by notions of individual flourishing, but are also informed by our answers to the question, how ought we best to live together? Educational practices are often explicitly justified in reference to social philosophy. An educational initiative is said, for instance, to sustain democracy or to help achieve social justice. Whether or not they are stated explicitly, though, such social visions are always present, guiding the choices of educators and affecting the shape of classrooms. Thus, another central project

for philosophers of education has been examining the ideals of collective human flourishing that animate educational practices and theories. The second entry deals with some of the major figures and currents in social philosophy and education.

The remaining two entries are devoted to the two sides of the process of education, teaching and learning. The third entry, on learning, considers philosophical contributions to questions such as: what does it mean to learn, how do we learn, what is most worth learning, and what does it mean to be a learner or student?

The fourth entry reviews the major philosophical positions advanced around the question, how best should we conceive of teachers and the act of teaching? For example, is teaching a practice, an art, a relationship, a profession, or an applied science? Are teachers best understood as instructors, facilitators, midwives, intellectuals, political activists, or shapers of an environment?

COMPETING SCHOOLS OF THOUGHT

Before turning to our survey of significant developments in these four areas, it is worth saying something here about the diverse modes of inquiry found in the contemporary field. Philosophers of education not only disagree about the nature of teaching, learning, and the aims of education, but they also disagree about how to approach these questions. In other words, the field is characterized by a robust methodological pluralism. It is part of the contribution of philosophy of education to offer specific arguments and conclusions, and also to preserve, articulate, and evaluate various theoretical approaches.

In the first place, philosophers of education differ in their understandings of philosophy, education, and the relationship between them. Two rival understandings of philosophy are found in the analytic approach and the history of philosophy approach. Analytic philosophy is characterized by fine-grained analysis of terms, careful evaluation of arguments, and a direct, ordinary language prose style. In some variants of analytic philosophy, this last quality is sacrificed to the first two activities, which are thought to require a highly technical, formalized language.) Typically, thought, the analytic approach prides itself on avoiding the jargon, inaccessibility, and fuzzy thinking that is typical of some philosophical writing. Modeling itself in part

on the natural sciences, it seeks slow but steady progress on small, well-defined problems, emphasizing the fallibility of its results. As R. S. Peters (1967), one of the founding figures of analytic philosophy of education, once quipped: good writing “has the prime philosophical virtue of being clear enough to be obviously mistaken.”

The history of philosophy approach begins not with a problem but with a text or tradition of thought, assuming that philosophical questions of real interest are inseparable from their articulation in the novel theoretical vocabularies of individual thinkers and philosophical schools. It prizes comprehensiveness of vision over exactness of detail, and depth of insight over irrefutability of argument. It gravitates toward problems based on their significance rather than on how tractable or well defined they are. On this view, philosophy is as much about asking questions as it is about finding answers and the great resource for novel, powerful questions is the canon of historically significant, philosophical texts.

The typical analytic complaint about this approach is that it promotes argument by authority. “It doesn’t matter who said it,” the analyst insists, “what matters is whether or not it is true.” The typical response to this critique is as follows. The truth of a philosophical theory cannot be established by simply comparing its individual claims against brute facts as if we had access to *the* world itself, unmediated by any theoretical presuppositions. Rather, we always deal with *a* world, or the world under a particular aspect. Thus, any rich theory offers its readers such a world, and this world must be inhabited before it can be evaluated. Such evaluation takes the form of testing its internal coherence and comparing it, not against brute facts, but against the explanatory power of rival worldviews.

Meanwhile, the history of philosophy approach has its own concerns about the analytic mode, which it views as making a fetish out of clarity and argumentative rigor. The analytic philosopher, the critique continues, is like the proverbial man looking for his keys under the streetlight—even though he dropped them elsewhere—because that is where the light is. Analytic philosophy is thought to discuss only what can be discussed with a high degree of precision and certainty, leaving philosophy mute on the questions of the greatest importance.

In its pure form each approach runs the risk of turning philosophy into an academic exercise divorced from the stakes and contours of lived life. Analytic philosophy risks becoming an exercise in argumentation and definition, while the history of philosophy approach risks becoming an exercise in genealogy and translation. Good philosophy, it would seem, requires both clarity and depth. In recent years, the tension between these approaches has eased and fortunately one now finds more work that straddles this divide.

There also are debates over how best to understand education and the place of philosophy in relation to education. Some scholars in the field tend to equate education with schooling, arguing that the field is inherently connected with this crucial public institution. Others suggest that it is one of the field's chief responsibilities to offer reminders that schools are but one of many educative institutions and that much of education occurs in informal settings. Thus, some educational philosophers insist that the purpose of the field is to improve schools; others stress our role in teacher education; and still others see philosophy of education as a sphere of basic research that should not be constrained by the immediate needs of schools or demands of teacher education. Meanwhile, some philosophers of education view the field as an application of theory to practice; others question this distinction pointing out that philosophy itself is an educative practice or that the practice of education is itself a form of inquiry and reflection.

Methodological diversity goes beyond understandings of philosophy, education, and their relationship. The field is also characterized by work in competing philosophical schools such as: pragmatism, critical theory, feminism, postmodernism, and hermeneutics.

Pragmatism is a complex philosophical position characterized in part by its view that knowledge claims are best understood by asking what difference they make in conduct, and by its portrayal of human beings as social, problem-solving creatures in interaction with an environment. Pragmatic philosophers of education draw on the founding figures of the movement—such as C. S. Peirce (1839–1914), William James (1842–1910), and especially John Dewey—and on more recent pragmatists, such as Richard Rorty, Hilary Putnam, and Cornel West—to address a variety of educational questions.

Critical theory is a broad term denoting social philosophy indebted to Karl Marx's (1818–1883) analysis of class struggle, and especially that related to Frankfurt School figures such as Theodor Adorno (1903–1969) and Jürgen Habermas. Critical educational theorists investigate the ways in which schools reproduce relationships of domination. A major strand of critical educational theory is critical pedagogy, the movement inspired by the work of Paulo Freire (1921–1997), whose most famous work is *Pedagogy of the Oppressed* (1970). Critical theory and critical pedagogy are discussed in greater detail in the Social Philosophy and Education entry later in this chapter.

Feminist philosophy of education began with the pioneering work of Jane Roland Martin (Rice 1999). In *Reclaiming a Conversation: The Ideal of the Educated Woman*, Martin (1985) strives to recover a neglected tradition of women's educational thought, and to question the masculine bias inherent in our ideals of the educated person. Other work in this area has dealt with notions of caring and mothering, with contesting the public-private distinction, and with providing a feminist account of teachers' authority. Feminism is not mutually exclusive with the last two categories discussed. Indeed, some works, such as Maxine Greene's (1988) *Dialectic of Freedom*, would be an example of all three.

Postmodernism is a broad term naming a number of related developments over the last several decades in Western philosophy, art, and everyday life. A central feature of postmodernism is our increased skepticism toward grand narratives of progress—whether religious, scientific, or political—and distrust of claims to objectivity. Postmodern philosophers argue that knowledge claims are shaped by the historical, cultural, and social location of their authors. They emphasize the contingency, partiality, and multiplicity of interpretations against the claims of reason to establish universal ideals or objective facts. Postmodern philosophy of education takes many forms. Some educational philosophers have looked at education itself as another grand narrative, noting how the educational project seems inseparable from a belief in the perfectibility of human beings and a faith that through education the future will be better than the past. Scholars such as Nicholas Burbules (1996) have asked what education might look like if we traded in this faith in our educability and steady educational progress for a more skeptical postmodern

stance. Other writers have applied this postmodern doubt to specific educational concepts. A postmodern critic might attempt to show, for example, that what seem like indisputable facts about the nature of intelligence or adolescence are actually fallible human interpretations embodying particular purposes and contingent histories.

The term “hermeneutics” refers to the art or science of interpretation. Many discussions of hermeneutics are tied to specific types of texts so that we might speak of biblical or legal hermeneutics. Philosophical hermeneutics is the general study of the nature of interpretation and understanding. For more on philosophical hermeneutics, see the discussion of Hans-Georg Gadamer in the Concepts of Learning and Theories of Knowledge entry. If, as a general rule, critical theory and postmodernism approach an object of interpretation in a suspicious manner, asking what it hides, hermeneutics insists that interpretation requires a receptive stance toward the object, asking what it is trying to say to us. Hermeneutics understands tradition as something to be understood and renovated, not as something to be embraced uncritically or fully rejected. Indeed, on the hermeneutic view, talk of the rejection of tradition is empty since it is tradition that furnishes us with the resources for critical understanding. One of the specific methodological principles in this approach is the hermeneutic circle, which states that understanding of the whole requires an understanding of the parts, but that understanding of the parts also requires understanding of the whole. This means that good interpretation requires a patient shuttling back and forth between tentative conclusions about, say, the overall meaning of a text and the meaning of its parts.

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ETHICS AND MORAL EDUCATION

From its earliest beginnings, philosophy of education has been inextricably connected with ethics. Socrates (c. 470–399 B.C.E.), one of the founders of the discipline, was chiefly concerned with the virtues. Plato (c. 438–348 B.C.E.) outlined two large-

scale educational systems in *The Republic*, but his main theme was ethical, namely: “What is justice?” Similarly, the *Moralia* of Plutarch (c. 45–125) opens with an essay on the education of children, and continues with lengthy discourses on the various virtues and how best to inculcate them. Latin writers on pedagogy followed suit. The *Institutio Oratoria* of Quintilian (c. 35–95) is a primer for the education of a Roman orator and rhetorician, beginning in childhood, yet the author maintains that “if the perfect orator had existed in some epoch, there would be no need to apply to the schools of the philosophers for the precepts of virtue.” The orator is a man skilled in speaking but also “perfect in morals” (Quintilian 2001, 61). Non-Western traditions similarly trace the beginnings of educational theory to moral texts: the Hindu Upanishads, the Buddhist Suttas, the Analects of Confucius, and the like. The great teachers of antiquity, whether religious or secular, were invariably teachers of ethics.

The thrust of all early theories of education, when formalized as such, was *character formation*. In Ancient Greece, this was called *paideia*, and was thought by Plato and Socrates to be accomplished through inquiry into the nature of the virtues and of virtuous behavior. For Socrates in particular, any such inquiry inevitably revealed that deeper, more profound contemplation was necessary. Education meant moral examination of one’s own life: ultimate personal well being was only possible through sustained training of reason, the intellectual capacity to seek out and apprehend the good. Aristotle (348–322 B.C.E.), on the other hand, recommended that children be put in the care of virtuous tutors, who would inculcate habits of virtuous action. The young man’s character would be formed by his repetition of these habitual patterns in situations calling for their exercise. Later, in religious communities, character formation was thought to proceed through careful attention to the dictates of authoritative texts, such as the Bible or the Koran. Still, despite their differences, ancient philosophies of education made moral education central and primary.

In the Christian West, the doctrine of original sin colored all educational thought before the renaissance. Man was defined as a fallen being, his inmost nature a great wickedness, redeemable only by the saving power of Christ. Moral authority (and therefore educational authority) derived from God.

Education operated under the auspices of the church, and its chief goal was salvation. Pedagogy was routinely evaluated from a doctrinal standpoint, and judged in terms of its perceived affinity for (or hostility to) the prevailing orthodoxy. Even Christian Humanists such as Erasmus (c. 1466–1536) did not dispute the ultimate authority of scripture (McConica 1991).

For this ethical stance to change, an entirely new, secular theory of human nature was required. Renaissance humanists had planted its seeds, but only after the Reformation did it have fertile ground in which to grow. In the work of Jean-Jacques Rousseau (1712–1778) we find it in full flower. In *Emile*, Rousseau (1979) casts the young child as “naturally” free, noble and compassionate—a view that, as the Archbishop of Paris rightly recognized, denies original sin. As opposed to the positive character formation of religious and classical educators, early education under Rousseau’s theory is primarily negative. It holds off on inculcating any moral rules or dicta, and instead seeks to shield the child from the vices and errors propagated by society. In this way, Rousseau felt, the child could grow up morally autonomous, self-loving without being selfish. The teacher’s role was to protect the child’s freedom and goodness from social depredations, a substantial, active task of constant watchfulness and no little censorship.

The larger ethical concerns of the Enlightenment were based in skepticism about the roots of moral authority. How was ethics possible without the grounding of religious truth? Several answers were proposed: morality could be based on obedience to laws inherent in human nature, on social contract theory, on conceptions of duty, on an analysis of social and political institutions, or on a calculus of the greatest happiness for the greatest number. But the philosophers who put these theories forward—David Hume (1711–1776), Immanuel Kant (1724–04), G. F. Hegel (1770–1831), J. S. Mill (1806–1873), and their contemporaries—wrote little on education *per se*. Enlightenment ethicists were concerned with finding new foundations for morality, not with the process of character formation in individual students. A distinct break had occurred. Talk about the good had turned away from talk about *learning* to be good. Moral philosophy had lost its intimate connection with educational theory.

MORAL DEVELOPMENT AND MORAL EDUCATION

In the late nineteenth century and for most of the twentieth century, philosophically minded social scientists were the main voices on moral education. The French sociologist Emile Durkheim (1858–1917) believed that a child developed morally by internalizing social rules and norms, and that moral education in schools was necessary to achieve this development (Durkheim 2002). Only in the schools could the citizens of a modern state build the rational, consensual morality that would preserve their democratic way of life. While not rejecting this view entirely, Swiss psychologist Jean Piaget (1896–1980) added that certain aspects of a child’s moral structure developed in action, through negotiating, game playing, and testing rules with peers, not merely through attachment to existing adult conventions. Thus, to facilitate moral development, schools would need to provide time and activities for children to develop rules and solve problems on their own (Piaget 1965). As social science, psychology in particular, began to seem like the natural grounding for pedagogy, learning theorists joined their colleagues in child development and developed philosophies of education. B. F. Skinner (1904–1990) and other American behaviorists published notable philosophical texts based on psychological theories (Skinner 1972).

Some of the most lasting and influential work of this nature was done by American psychologist Lawrence Kohlberg (1927–1987). In the early 1970s Kohlberg proposed that moral reasoning developed through six invariant stages, from fear of punishment to action on principle. Progress from one stage to the next was, he believed, possible only under the impetus of discussion, where children could be exposed to reasoning at a higher stage. This led him to develop practical initiatives in moral education, such as one-person/one-vote “Just Community” schools (Kohlberg 1973).

Kohlberg’s work has proved extremely controversial. Some critics feel he was too quick to equate moral reasoning and moral articulation with moral behavior in real-world situations. His theory, they claim, describes not stages of moral development but stages of moral rationalization. Another important line of criticism, beginning with the work of Carol Gilligan (1982), charges that Kohlberg’s theory devalues

moral principles and structures based on relation (such as care and compassion) while overvaluing those based on ideas of impartiality as abstract from social networks or persons (such as justice). Since women and girls tend to use structures of relation in moral analysis more often than men and boys, they are artificially placed “lower” on Kohlberg’s scale, and seen as less mature.

Nevertheless, Kohlberg and his contemporaries (including most of his critics) spoke the same language, that of evidence-based, empirical research, mostly in the field of psychology. They were philosophically minded social scientists who saw their work as scientific, geared toward achieving observable results: moral, or “prosocial,” behaviors. They worked to make character formation into a testable, researchable discipline—moral education—and they developed a rich scientific discourse with which to talk about it. For a time, this way of talking and thinking about moral education was the dominant form of discourse in the field. It remains a familiar model.

THE CONTEMPORARY SCENE

Over the last several decades, philosophers of education have begun to mend the modern rift between moral philosophy and moral education. This renaissance has involved three related developments. First, there has been a resurgence of a distinctly philosophical discourse in moral education. Second, there has been a renewed focus on educational questions in moral philosophy, in part because of the rise of virtue ethics. Finally, recent years have seen the emergence of a new understanding of the practice of teaching as itself a moral endeavor. Each of these developments will be considered separately.

Moral education programs are now routinely justified and criticized on philosophical rather than psychological grounds. There is still a great deal of psychological research on prosocial behavior (Solomon et al. 2001), but this is no longer the dominant paradigm. The Values Clarification curriculum so popular in the 1970s (Raths et al. 1978) faded not so much due to Kohlberg’s persistent psychological critique, but due to its proponents’ failure to defend themselves adequately against widespread charges of moral relativism. The successor to Values Clarification, the Character Education movement, puts itself forward squarely as an attempt to codify

and instill certain virtues (Bennett 1993). Recent curricular reforms developed and popularized by academic philosophers draw on classical as well as modern texts and wrestle with enduring philosophical problems (Lipman, Sharp, and Oscanyan 1980; Adler 1982). We seem to have come full circle back to Socrates.

The psychologically important idea of developmentally “higher” and “lower” stages of moral reasoning is still very much in play, but some forms of moral explanation and discourse, even among young children, are now recognized as *philosophically* interesting. Kohlberg’s understanding of justice is recognizably similar to that of John Rawls (1971). Gilligan’s work on relation (1982) provides the groundwork for Nel Noddings’s (1984) ethic of care, and it has also influenced the writing of moral particularists. (Briefly, moral particularism is the belief that there are no universal moral rules that can, without exception, guide ethical behavior in different situations.) Philosophers do not see either ethical mode as male or female, or as developmentally superior or inferior.

Another important factor in restoring the connection between moral philosophy and moral education has been the recovery of virtue ethics—a new and far-reaching development in moral philosophy. This movement began (Anscombe 1958) as a revolt against moralities of duty and obligation, and equally against those that find good in the consequences of particular acts. It thus opposed both the deontology of Kant and the utilitarianism of Mill. Virtue ethicists are interested, rather, in the habitual dispositions of particular moral agents. Since habitual dispositions are *acquired* traits, the manner of their acquisition becomes important, leading many virtue ethicists to write about moral education. Their findings are various: one notable philosopher in this tradition has determined that moral education is vital (MacIntyre 2001) and yet that the teacher’s job today is impossible (MacIntyre 1987).

In addition to the rise of philosophical discourse in moral education and the revival of virtue ethics in moral philosophy, recent years have witnessed an important new line of research about the inherently ethical nature of the practice of teaching. Here, American philosophers of education have led the way. Combining empirical research with philosophical inquiry, the “Manner in Teaching Project has shown that one essential element of any classroom interac-

tion is the moral disposition and character of the teacher, or the teacher's *manner* (Richardson and Fenstermacher 2001). Similarly, Philip W. Jackson writes that teaching is a moral endeavor, always influenced by a teacher's implicit, stylistic, and indirect expressions of virtue. These virtuous habits, Jackson (1999) claims, are expressed in the mundane, everyday exercise of teaching, not confined to moments where explicitly moral dilemmas are confronted. David Hansen (2001, 1–19) has similarly questioned conceptions of teaching that are outcome-based, or see teaching as a means to an end. Hansen (1995) sees it as a calling or vocation, a transformative moral practice of enriching students' minds and spirits. Such a conception necessarily focuses attention on the teacher's moral self and her situation in a larger tradition (Hansen 2001, 20–40 and 114–192).

Numerous philosophers and researchers have added their voices to this vision of teaching. Along with virtue ethicists and character educators from the political right and left, they are once again making ethics a central theme in philosophy of education.

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SOCIAL PHILOSOPHY AND EDUCATION

There is a close relationship between social or political philosophy (henceforth simply referred to as “social philosophy”) and philosophy of education. Social philosophy concerns such questions as: How should we live together? What kind of society is best? and, What kind of political system is most just? Philosophers since at least as early as Plato (427–347 B.C.E.) have known that creating an ideal social and political order requires educating citizens who will be capable of realizing that vision. While social philosophy envisions an ideal community, schools, classrooms, curricula, teachers, and students are the means through which these ideals are put into practice. Education has the power to shape societies and to determine the path by which a given society realizes its social ideals. For this reason, one of the tasks of educational philosophy is to reflect upon the rela-

tive values and significance of the social ideals that undergird and guide a society's educational practices.

In the liberal democratic tradition, social philosophy and education assume a particular form. On the one hand, democracy requires common goals and consensus. On the other hand, it depends upon dissent and an open exchange of ideas. Education in democracies therefore finds itself faced with two potentially conflicting tasks: it must teach future citizens to live together in harmony, but it must at the same time teach them how to express opinions which are opposed to the common or majority view. Therefore, democratic education must both reproduce *and* renovate a given society, maintaining a set of collective goals while at the same time revitalizing and improving them (Euben 1997). While some educational theories have sought to address both of these social purposes simultaneously, most have emphasized one concern or the other. As Neil Postman (1979) suggests, there are two traditions of educational thought in the West: One views education as first and foremost a “conserving” activity; the other sees education as primarily “subversive.”

Both of these traditions have a long history. If, as Alfred North Whitehead famously quipped, “all philosophy is a footnote to Plato,” then it should not surprise us to find arguments in favor of each of these opposing educational aims in Platonic thought. The conserving vision of education can be represented by Plato's line of argument in *The Republic*. In this work, Plato (1992) argues that education should cultivate citizens who can sustain the social and political order. Education should support the needs of society and prepare future citizens to participate in it harmoniously. The “subversive” vision of education can be represented by Plato's character of Socrates (Postman 1979). Through the figure of Socrates, particularly in *Apology*, Plato (1961a) suggests that education should teach individuals to challenge the complacent values of society. For Socrates, and for the subversive tradition more generally, such opposition to current social norms is not opposition to society itself. On the contrary, such critical examination of present norms is undertaken in order to renew a society and make it more faithful to its own ideals.

Many thinkers have since traveled down one of these paths blazed by Plato. In what follows, each of these traditions of social philosophy of education will be considered in turn.

EDUCATION AS CONSERVING

The vision of education as conserving starts from the premise that society is basically good and that the purpose of education is to preserve and maintain its values and traditions. The aim of conserving education is the creation of good citizens. It emphasizes how to participate in a given society in productive ways, not how to challenge, disrupt, or transform the social order.

Education for a Harmonious Social Order

In the first place, the conserving tradition emphasizes the need for harmony in society. In *The Republic*, Plato (1992) asks what is required to create an ideal just state. He concludes that the best community is a harmonious one, and that this requires each person to perform the social role for which he is best suited. In order for this to occur, Plato argues, the state must educate citizens to fulfill their roles. For Plato, then, education is essential to realizing the ideal of just or harmonious society in which the integrity of the community is put before the free expression of the individual.

For Aristotle (348–322 B.C.E.), the question of whether education should conserve or critique social mores, promote harmony or individuality, was not a prescriptive one. Rather, Aristotle makes a descriptive point when he portrays education as a conserving activity. For Aristotle (1955), the most important thing to be learned is virtue or excellence of character, and the only way that this can be learned is by witnessing exemplary members of one's community as they enact the virtues. Education must be conserving, therefore, since the substance of education is the mores of one's society.

Education for Democratic Participation

The idea that education could prepare citizens to live together amicably is also the basis of the public schools movement in the United States. Access to universal public education is close to the heart of the American conception of democracy. For Thomas Jefferson (1743–1826), a participatory democracy required a literate citizenry, fully capable of understanding and debating the merits of a host of political issues as a prerequisite to casting informed votes.

Producing such a citizenry required a firm commitment to universal public education. Jefferson and other leaders in this movement, including Benjamin Rush (1745–1813) and Noah Webster (1758–1843), advocated a uniform and systematic form of education that would create a united citizenry with a common culture and commitment to common goals. Homogenization of a diverse population was necessary in a new country without a history or culture to bind it together. Education would also prepare future leaders in a new land led not by monarchs but, rather, by free men. Thus, Jefferson outlined a plan for public schools open to all (though this did not at the time include women, slaves, or other disenfranchised people).

Horace Mann (1796–1859) continued the American public schools movement and advocated what he called the “common schools” (Mann 1957). In particular, he responded to the vast waves of immigration in the United States and the need for an education that gave people a common basis. Mann argued that education was necessary in order to unite the populace and argued that education should be the “great equalizer” in the United States.

In the twentieth century, John Dewey (1859–1952) was the most influential thinker to discuss the interrelationship of democracy and education. For Dewey, as for all of the thinkers in this tradition, education exists to sustain communities. He wrote, “The primary ineluctable facts of the birth and death of each one of the constituent members in a social group determine the necessity of education . . . Beings who are born not only unaware of, but quite indifferent to, the aims and habits of the social group have to be rendered cognizant of them and actively interested” (Dewey 1916, 3). Through education, older generations pass on to the younger generations their ways of life. Without education, there would be no continuity from generation to generation, and society could not sustain itself.

Dewey was particularly interested in how specifically democratic societies reproduce themselves through education. According to Dewey, democracy includes not only what we consider to be democratic activities such as voting, but also, and more significantly, a mode of interacting based on equality and exchange of ideas. For Dewey, then, democracy was more than a political system; it was a form of life. To live democratically is to take into account the inter-

ests of all of a society's members, and democratic education must teach people to live together in such a way. Education, for Dewey, was not only a preparation for democracy as it was for Jefferson and the public school movement. Rather, the school itself became a microcosm of the greater society in which young citizens practiced living together in a democratic fashion.

More recently, political theorists such as Amy Gutmann (1987) and Benjamin Barber (1992) have argued that education must teach democratic values so that people from diverse backgrounds can share in a common civic culture. This entails teaching them about the history of American democracy with the intention of creating a sense of commonality. Although such contemporary philosophers also emphasize the importance of dissent in democratic societies, they insist that the purpose of such disagreement is to create a cohesive society in which people come together to work toward common goals and sustain community life.

Education as Cultural Inheritance

A number of philosophers of education have argued that education is responsible not only for passing on political traditions, but cultural ones as well. For a community to flourish, its culture must be carried on, and this requires education. Notable thinkers within this tradition include Matthew Arnold (1822–1888), Robert Maynard Hutchins (1899–1997), and Michael Oakeshott (1901–1990). These philosophers described the school as a reflective space in which students can be introduced to their culture and to the values embedded in its artifacts (Arnold 1994; Hutchins 1999). Such learning takes place in school because life outside of the classroom is often too busy and too driven by utilitarian priorities for careful study of forms like drama, poetry, music, and art (Oakeshott 2001).

More recently, E. D. Hirsch (1988) has made a related argument in favor of “cultural literacy.” Rather than focusing on the passing down of the canon, though, Hirsch emphasizes the transmission of common cultural terms and references. In Hirsch's view, all students need such cultural literacy to succeed in society. This shared base of knowledge allows us to communicate across our differences and forge a more cohesive national identity. In a society characterized by the mixing and melting of cultures,

however, the question of what should count as “cultural literacy” is a fractious one. Multicultural critics are apt to point out that any list of cultural references will inevitably reflect the bias of particular subcultures. To declare such a list “common knowledge,” they fear, is to perpetuate the marginalization of subcultures whose ideas, figures, and terms have yet to gain wide currency.

EDUCATION AS SUBVERSIVE

Whereas the vision of education as conserving trusts that society is good and can be preserved as such through education, the vision of education as subversive begins with the idea that society is flawed, characterized by such vices as thoughtlessness, conformity, injustice, and greed. Education therefore becomes a means of challenging society's vices in order to create a more just social order and to free individuals from oppressive social structures. In this view, education works *against* society, but for its own good.

Education as the Cultivation of Dissent

Let us return briefly to the work of Plato, which can be seen as inaugurating the subversive tradition as well as the conserving one. In the Platonic dialogues, Socrates is presented as a gadfly who taught others to scrutinize their accepted beliefs. Socrates' particular approach was to engage an interlocutor in a dialogue about everyday matters and to question the assumptions that arose. When one of his interlocutors claimed to know something, Socrates would inquire further, through a process known as *elenchus*, until the interlocutor realized that the assumption was based on partial, incorrect, or faulty thinking. This challenging approach caused discomfort in his fellow citizens, ultimately leading to Socrates' imprisonment and his famous trial. In his defense he argued that it was for his society's own good that he questioned and taught others to do the same. If a democracy is to have deliberation and discourse, then its citizens must be trained to think. Socrates' judges were not convinced and called for his death. This verdict can be understood as a tragic instance of a failed democracy that did not value its greatest educator. Plato's depiction of Socrates' life and death suggests that education in a democracy should struggle against the tendency of communities to lapse

into conformity of thought. A healthy democracy should value its subversive elements.

A contemporary educational movement with its roots in this Socratic ideal of dialogue and dissent is commonly referred to as *critical thinking*. (See next entry for a discussion of critical thinking as an approach to learning.) The critical thinking movement values intellectual autonomy, aiming to teach students to think carefully, logically, and dialectically as Socrates did. This is an essential part of civic education in a democracy, which requires that all people are capable of deliberation. It is also considered important for identifying media bias, resisting the power of commercial advertisements, social prejudices, and, more generally, judging the validity of others' claims and reasoning. (Paul 1995).

Education and the Dangers of Socialization

In the modern era, thinkers such as Michel de Montaigne (1533–1592), Jean-Jacques Rousseau (1712–1778), Ralph Waldo Emerson (1803–1882), and Friedrich Nietzsche (1844–1900) developed the subversive tradition in new ways. For these thinkers, society's tendency toward mindless conformity required more than the examination of arguments and the cultivation of dissent. What was called for was the cultivation of genuine individuals, people capable of figuring out who they are, what they need, and what they value. Such thinkers offered ideals of self-examination, self-reliance, and authenticity as antidotes to conformity and slavishness (Montaigne 1993; Emerson 2003; Nietzsche 1990).

According to Rousseau, education should follow the natural development of the young and shield them from the corrupting influences of society. In *Emile: or On Education*, Rousseau (1979) argues that people are naturally good but that society severs individuals from their natural impulses, thereby denying them their full humanity. For Rousseau, true education is filled with the "lessons" of nature, not those of books; it is motivated by necessity, not the authority of the teacher. Like Socrates before him, Rousseau understood education as a subversive force, working for the long-term health of society by opposing its present forms and tendencies.

There have been several attempts to put Rousseau's philosophies of education into practice in schools. Most famous is the Summerhill School in England

founded by A.S. Neill (1883–1973). Neill (1992) designed the school to be a haven away from society in which students could develop naturally, without coercion, at their own pace, and according to their own interests. Students at Neill's school were allowed to choose whether to attend classes, and the students had control of the governance of the school. The "deschooling" movement of the 1960s and 1970s led by Ivan Illich (1926–2002) was inspired by this same ideal (Illich 1971). These experiments in radical education endeavored to realize a social order in which people would not conform to the external authority of the state or society.

Education for Social Justice

Another strand of contemporary thought in the subversive tradition has focused less on the problems of conformity and more on deep structures of social inequality such as class, race, and gender. Here the question of how to educate the citizenry becomes more difficult because Western societies are not only democratic, but also capitalist. Following the work of Karl Marx (1818–1883), who considered the ways in which the capitalist system both produced and perpetuated economic inequality, this has meant a focus on the way in which schools as social institutions contribute to the uneven distribution of wealth across the population. Over time these theories have become increasingly nuanced, as other differences that can serve as the basis for social inequality—race and gender, to name the most prominent among them—have been included for consideration.

For such critical theorists, education is both current cause and potential remedy for various types of oppression and inequality. This line of inquiry has looked directly at practices within schools that reinforce existing hierarchies (for example, by studying ability tracking and its correlation to student socioeconomic level, or by examining how testing practices presume knowledge more available to some social groups than others). Or it may focus on the way in which certain kinds of abilities and skills become dignified with the label of knowledge to the exclusion of others. Influenced by Marxian thinkers such as Antonio Gramsci (1891–1937), Louis Althusser (1918–1990), and by the singular work of Michel Foucault (1926–1984), philosophers of education have come to see knowledge itself as an effect

of power relations in the larger society. What sorts of things come to count as knowledge, and what sorts of methods and approaches are accepted as leading to that knowledge have both come to seem as much a matter of politics and power as a matter of pure epistemology.

A notable example of the critical theoretical approach can be found in the work of Paulo Freire (1921–1997). Dismayed by the social, economic, and political inequities he saw in peasant communities in Brazil, Freire (1970) created a method he called “pedagogy of the oppressed.” In his view, traditional education provided a curriculum almost entirely disconnected from the realities of the students and thereby played its part in leading students to misunderstand and misrecognize the true nature of society and the injustice of its arrangements. In place of this, he advocated a method in which students would confront—or “name”—their reality. The goal of such education is to pose current reality as a set of problems, thereby helping students understand the obstacles to social justice and to create and implement solutions.

In the last few decades, Michael Apple (1990), Stanley Aronowitz (Aronowitz and Giroux 1985), Henry Giroux, and Peter McLaren (1986) have been notable proponents of the view that schools are ideologically motivated institutions that can function to oppress and marginalize certain people in society. They assert that education today plays its part in producing and maintaining an unequal social and economic order, promoting values antithetical to a truly democratic and multicultural society.

This line of critique has been complicated and enriched by thinkers such as Valerie Walkerdine (1981), Jane Roland Martin (1985), Elizabeth Ellsworth (1989), bell hooks (1994), and Lisa Delpit (1995), who draw from feminism, multiculturalism (with its roots in post-colonial and critical race theory), and queer theory in order to provide an ever more finely tuned view of how social differences play out in a variety of educational settings. In all of this work there is an interest in understanding how relationships of domination and subordination play out in traditional education, and in devising approaches that will alter and ameliorate those relations. At the heart of this approach is a passion for social justice and the belief that educational practices should work to create a more just society.

Finally, the work of Maxine Greene is a prominent and powerful voice in the contemporary discourse on philosophy and politics. Like Freire, Greene suggests that naming obstacles and striving for new possibilities is essential to realizing our potential as human beings (Greene 1995). In particular, Greene suggests that art is an important means to liberatory education. She asserts the importance of aesthetic experience in education as part of an effort to create an ideal political and social climate.

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CONCEPTIONS OF LEARNING AND THEORIES OF KNOWLEDGE

Whenever we successfully educate, our students learn. This is the case whether the learning is self-directed or imposed, internally or externally motivated, the result of rote memorization or constructive inquiry. It holds true across all academic disciplines: the words “student” and “learner” are virtually interchangeable. Therefore, a philosophy of education must include an account of the nature and purposes of learning. In order to provide such an account, one must consider questions such as: What is knowledge? What can be known? How do we come to know? What is truth? What counts as reliable evidence? What is the difference between knowledge and understanding? What knowledge is of most worth? The branch of philosophy that deals with these questions is epistemology. What follows is a survey of several important conceptions of learning with attention to the epistemological issues raised by each.

LEARNING AS ACQUISITION OF KNOWLEDGE

According to the most familiar model, to learn is to gain knowledge—but what is knowledge? Classically, knowledge has been defined as justified true belief. That is, we know something when (1) we believe it, (2) our belief is true, and (3) our reasons for believing are sound. We can, of course, learn things that are not knowledge. We can hold false or unjustified

beliefs. But such learning is not generally considered to be among the aims of education. We would prefer our students to possess something more like justified true belief. Justification, truth, and belief are all important topics within epistemology.

Of these, truth has been the object of the greatest attention and debate. The mathematician and logician Alfred Tarski (1944) famously defined truth as follows: The statement “Snow is white” is true if and only if snow is white. In other words, a proposition is true in so far as it corresponds to an external, objective reality. This view and others like it are called correspondence theories of truth. Correspondence theories are also foundational; they presuppose that we can know certain truths about the world, and build upon this knowledge to determine other truths. Certain beliefs, in other words, are trivially or self-evidently true (foundational), and more complex beliefs are built on them. René Descartes (1596–1650) proposed his famous axiom, “I think, therefore I am,” as one such foundational belief (Descartes 1997). Israel Scheffler (1965, 4–5) distinguishes two kinds of foundational views: the rationalist, which deduces claims from axioms, and the empiricist, which builds on our experience of the natural world.

For most of the history of philosophy, foundational theories of truth were the only ones given serious consideration. However, such theories are prone to problems of regression. If complex beliefs rest upon simpler, more evident beliefs, what do these beliefs rest on? How do we know that our most basic beliefs (sense data, for instance) actually correspond to reality? To what foundational beliefs may we appeal to guarantee that the whiteness of snow is not a mere appearance, but actually a feature of reality?

John Dewey (1859–1952) rejected foundationalist understandings of truth. According to Dewey’s (1963, 36–55) pragmatic epistemology, an idea is true when it is successfully used in action to solve problems and in inquiry to advance a conversation. The truth of any idea is a function of its usability. Under such a conception, no truth is ultimate or unchangeable.

Other theories of truth avoid foundationalism differently. Coherentism, for instance, maintains that large-scale, logically consistent belief systems are true, and that individual beliefs are true in so far as they “fit” into such systems. Many pragmatists and postmodernists, rejecting classical ideas of truth, hold something like a coherentist view. But this too has

its problems. It is possible to build a logically consistent set of beliefs that bears no relation to the actual state of things in the world. Some conspiracy theorists hold such a set of beliefs, and we are reluctant to call them “true.”

It is evident that our brief discussion of truth has already moved us into the area of justification. If I believe something on a hunch or a whim, I cannot be said to “know” it, or (in any rich sense) to have learned it. Superstition is not knowledge. Another set of questions in epistemology, then, revolves around what sorts of processes can reliably justify a belief.

One way to elide these questions is to engage in radical skepticism about all forms of truth, to state that “there is no such thing as Truth,” that what passes for truth is merely socially constructed belief, semantics, or power relations. One prominent epistemologist, Alvin Goldman (1999, 7–40) has catalogued no fewer than six different forms of this “veriphobia.” As the contemporary philosopher Bernard Williams (2002) has pointed out, this way of thinking is both dangerous and wrong. It is dangerous because it subverts academic virtues such as truthfulness. How can we ask students to be truthful if truth is an illusion? It also cheapens the humanities, where such denials are more commonplace than the sciences. If history and literature have no truth to offer, why study them? But, equally if not more importantly, the “truth deniers” are inconsistent; they use hidden truths to leverage their own denials. For example, persons who claim that truth is a mask for power relations are stating a belief and if pressed will offer justifications.

When we conceive of learning as the acquisition of knowledge, we are forced to take a stand on these thorny questions about the nature of knowledge, truth, and justification. Different epistemological assumptions lead to different conceptions of the student and the act of learning. For example, a rationalist epistemology makes it most important for the student to learn axiomatic truths, and is most at home in the teaching of mathematics. An empiricist model, by contrast, will focus on crafting experiences that will help the student learn more about the world.

LEARNING AS DEVELOPMENT OF SKILLS

All of the forms of knowledge so far discussed have been propositional. That is, the knowledge they rep-

resent can be stated as a set of propositions, or declarative sentences. Such sentences can be true or false, justified or unjustified, believed or doubted. But propositions are not the only things we talk about when we talk about learning and knowing. A student can also learn to read, ride a bicycle, or bake bread. None of these forms of knowledge fit neatly into the propositional paradigm. Language acquisition has famously eluded it. With what propositional beliefs are children armed as they start to learn their native tongues? The question seems unanswerable. Languages, like so many other things we learn, are skills, abilities, or capacities, and a skill cannot be reduced to a set of beliefs. In speaking of skills, we are likely to use the phrase “knowing how” as opposed to “knowing that” (Ryle 1949, 25–61).

To explain how we gain such understanding or “knowing how” requires something other than classical epistemology and the knowledge-acquisition model. Several important alternate paradigms, each attached in some way to a theory of learning, have been proposed.

Behaviorist theories see the student as responding to environmental stimuli by exhibiting observable behaviors, and concern themselves with how best to elicit such behaviors. The student is envisioned largely instrumentally and mechanically, as a relatively passive respondent in a teacher-mediated environment. The method is that of objective science. Cognitive theories focus on the process of development in the learner and see knowledge as always in flux. They concern themselves with each student’s readiness to learn new concepts, charting stages of development according to the child’s cognitive capacity. One such theory, Jean Piaget’s (1971) *Genetic Epistemology*, sees knowledge itself as developing like a person, within historical time. Social learning theories maintain that all complex human learning takes place in a social framework, and that it is a mistake to see the learning process solely as something going on in one individual learner. Instead, such theories prioritize the interaction between student and teacher (Vygotsky 1978, 79–91) or between student and environment (Bandura 1977).

Behaviorist and cognitive theories of learning tend to envision skills as small units of practices. Practical know-how is seen as a technical ability, learned by breaking down and mastering these smaller skills, applying rules to them, and learning how the rules fit

together. Thus a basketball player, for example, knows how to dribble, to pass, and to shoot, and when to do these things in the context of a game. Under this paradigm, higher-level work, like medicine, would be mastered by learning basic science and applying it to the practice. Donald Schön (1930–1997) calls this epistemology of practice “technical rationality.” He claims it is the dominant educational model, but of little use in helping practitioners solve complex problems in the field. Instead, he proposes “reflection in action.” Under this paradigm, people learn by doing, together, and teach themselves by reflecting on their own responses to moments of vulnerability, surprise, or lack of control (Schön 1987).

LEARNING AS PERSONAL TRANSFORMATION

Some philosophers of education conceive of learning as a profound process of change. Philip Jackson (1986), for example, distinguishes between what he calls mimetic and transformational teaching. The mimetic model views teaching as the transmission of knowledge and skills. It understands learning as the addition of discrete pieces of information to an existing framework. The transformational model sees the teacher as someone who provokes and guides a qualitative change in the consciousness of the student. It conceives of learning as an ethical change, in which students acquire new terms with which to understand their lives.

The mimetic model is more likely to be endorsed in a pluralistic society where the schools are expected to remain neutral on questions of the good life. The idea that education is simply the transmission of information seems to satisfy this condition of neutrality. In contrast, the notion that education involves a transformation of the whole person is likely to seem anti-democratic. Whether mimetic learning is truly neutral on the question of how one should live is not at all clear, but transformative educators certainly cannot avoid this question. Transformational learning may even strike some as a form of indoctrination, violating the autonomy of students.

In most transformational theories, though, the student is seen as a willing partner who takes responsibility for his own learning. Furthermore, where indoctrination suggests conversion to a common mindset, transformational theories typically view the “knowledge” learned (or constructed) as a set of

deeply held personal insights and moral meanings, which necessarily differ from one student to the next.

Consider the example of liberal education, our most enduring tradition of transformational learning. For Michael Oakeshott (1901–1990), the leading modern theorist of this tradition, liberal learning is a conversational quest for self-understanding. A human being, Oakeshott (2001) claims, is constituted by his thoughts, sentiments, purposes, and meaningful expressions or actions—and humans must learn these things. Thus, liberal education is not so much a transformation of a person as a transformation into the full possibilities and responsibilities of personhood. In this tradition, learning is an essential feature of our humanity.

Indeed, far from indoctrination, many transformational theories view education precisely as liberation. Again, the tradition of liberal learning can serve as an example. As Robert Maynard Hutchins (1899–1977), former president of the University of Chicago and leading modern representative of this tradition, puts it: “Liberal education is for everybody, because everybody has a right to have his mind set free” (1969, 112). There is also a family of liberatory theories, which view education as a transformation freeing students from the effects of political inequality and social oppression. This conception is discussed in greater detail in the next entry.

NORMATIVE DIMENSIONS OF LEARNING

Whether we view learning as knowledge-acquisition, skill development, or personal transformation, one question inevitably arises: What is most worth learning? In other words, educational epistemology has a normative dimension. In addition to asking what knowledge is and how we come to know, we must also ask the question made famous by Herbert Spencer (1820–1903): “What knowledge is of most worth?” (Spencer 1963)

In the knowledge-acquisition model, the answer to this question seems to be: that which we have the most reason to believe. In other words, the ideal is to scrutinize all beliefs for their truth and justifiability. Once something is established as knowledge, it is clearly worth being taught. The trick is that all justifications are fallible and all epistemic conclusions reversible. In this tradition, then, what is normative

is not a set of conclusions, but an attitude toward reasoning itself. Thus, many philosophers of education have explored the nature of “critical thinking,” or thinking that shows due care and attention to “the probative force of the relevant reasons” (Bailin and Siegel 2003, 182).

Relocating the normative question from “What knowledge?” to “What approach to knowing?” still leaves ample room for controversy. While some theorists have sought to identify universal features of good thinking, thinking most likely to lead to knowledge, other scholars have pointed out the multiplicity of ways of thinking and types of intelligence. Psychologist Howard Gardner (1993, 12) refers to his multiple intelligences as “ways of knowing the world,” and suggests that schools must take all of these ways into consideration when designing curriculum and pedagogy. Mary Belenky (1997) and her colleagues have argued that some of what we have taken to be universal strategies of knowing are in fact masculine ones, and that there exist in contrast distinctive “women’s ways of knowing.”

In the skill-development model, the key normative question is “Into what practices is it best to be initiated?” As R. S. Peters (1967, 22) remarks, “arguments must be given for initiating children into activities and forms of awareness such as science and poetry rather than bingo and horror films.” One philosopher who has answered this call is Alasdair MacIntyre. MacIntyre’s (1981) theory of ethical practices emphasizes the plurality of worthwhile activities while still providing a way of understanding the greater value of arts like painting and poetry, disciplines like history and philosophy, and other longstanding practices like fishing and governing. Any attempt to rank some cultural activities above others, however, is bound to be hotly contested. Multicultural critics point out that hierarchies between activities inevitably reflect cultural biases and a history in which certain cultures have been privileged over others. Others take issue with the very notion that any symbolic activity is in itself richer or poorer, arguing that we ought to focus instead on what participants do within their chosen spheres. Paul Willis (1994), for one, argues that young people may exercise more “symbolic creativity” with the resources of magazines and comic books than adults do at the museum or opera house.

One might expect that learning as transformation is

the one model that safely avoids such normative epistemological questions. Talk of self-understanding and meaning making may strike us as entirely subjective, as if students in this model could project whatever meanings they wish upon an issue, text, or event. Many scholars working on this model, however, have sought to show how learning can vary across learners—given the personal investments and idiosyncratic histories of learners—without therefore becoming arbitrary. Wolfgang Iser (1978), for example, explores how literary texts structure the experience of readers even as it is the imagination of the reader that brings the text to life. Similarly, Elizabeth Ellsworth (1997) explores how learning involves being positioned by a teacher's, classroom's, or text's "mode of address," that is, its set of assumptions about who the learner is. This is also a central problematic in philosophical hermeneutics, the study of interpretation, understanding, and their place in human life. Hans-Georg Gadamer (1900–2002), the key figure in this area, argues that all understanding requires interpretation and that all interpretation requires application of a text or idea to the new and particular situation of the interpreting subject. At the same time, Gadamer (1993) takes great pains to show how impersonal forces such as history, language, and the structure of play enable and constrain the process of interpretation.

In the end, however, ethical questions are unavoidable in this conception of learning as in the others. Here the question is not about the quality of reasoning or the relative worth of practices, but concerns the kind of person it is excellent to become (via the transformation of learning) and the richness and intelligibility of our life narratives (via our efforts at liberal learning and other varieties of meaning making).

One relatively new way of working with the normative dimensions of learning is through virtue epistemology. According to virtue epistemologists, human beings are capable of possessing intellectual "good habits," qualities such as perseverance, open-mindedness, judgment, and the like (Zagzebski 1996). Many such theorists claim that intellectual virtues serve as normative tests for justification: evidence for a belief is reliable when it is arrived at through the operation of these traits. A belief becomes more authoritative when it is expressed by a person who has come to believe it through intellectually virtuous means, and who expresses it within that context. Under such a conception the student must, to achieve knowledge,

learn these habitually virtuous ways of knowing. Thus, for virtue epistemologists, all education is in some sense moral education.

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THE TEACHER AND THE ACT OF TEACHING

What is teaching and what does it mean to be a teacher? How should we understand the nature of the teacher-student relationship? Such questions have long occupied philosophers of education bent on understanding the complex human interactions at the heart of the educational enterprise.

In recent years, there has been a good deal of controversy over the preparation of teachers. Some contend that teachers need more expertise in their subject matters; others suggest that teachers need more expertise in instructional methods. Both sides in this debate seem to agree, however, on a common conception of the teacher as a professional defined by a kind of expert knowledge. This idea is not as uncontroversial as it may seem. It is based on a particular model of professional practice—the technical, applied-science model—and it assumes that learning involves transmission of knowledge rather than the transformation of persons. For more on these two conceptions of learning, see the previous entry. Though it has come to seem like common sense, the notion of the teacher as expert has a determinate history (Welker 1992) and philosophers of education, past and present, have explored many alternative conceptions.

For example, the teacher has been envisioned as a turner of souls (Plato 1992; Haroutunian-Gordon 1991), a liberator (Nietzsche 1990), a revolutionary (Counts 1978), and a stranger (Greene 1973). Teaching has been described as: a calling (Hansen 1995); a moral craft (Tom 1984); and a quest for spiritual insight (Inchausti 1993), self-knowledge (Palmer 1998), and immortality (Blacker 1997). In this entry we will consider three broad conceptions, each with its own variations: teaching as learning, as facilitation, and as relation. Though different in key

respects, all three of these conceptions could be said to have their roots in the enigmatic figure of Socrates (c. 470–399 B.C.E.).

THE EXAMPLE OF SOCRATES

In the dialogues of Plato (c. 438–348 B.C.E.), we have our first and most enduring image of a teacher who is above all an exemplary learner. Indeed, Socrates denied that he was a teacher at all. To understand why he did this is to understand why, in fact, Socrates can be considered one of the greatest teachers of all time. Socrates defined himself against the professional teachers of his time. These teachers, known as “sophists,” supposedly possessed great knowledge, which they taught their students for a fee. Socrates believed this kind of teaching was dangerous, for it convinced people that it matters more to know or even to appear to know than it matters to seek after wisdom. Of primary importance to Socrates was self-examination, for as he famously put it: “the unexamined life is not worth living.” (Plato 1961a) Socrates undertook his self-examination in public, drawing others into dialogue about matters of fundamental concern. Socratic dialogues tend to move not from questions to answers, but from answers—or as it turns out, assumptions—to questions. Socrates did not teach others by sharing wisdom, but by modeling what it is like to be a perpetual student in the quest for wisdom.

Socrates also serves as the archetype of another conception of teaching. In Plato’s (1961b) *Theaetetus*, Socrates refers to himself as a midwife. In other words, through his relentless questioning, Socrates helped his interlocutors give birth to their own ideas. This suggests a vision of the teacher not as someone who imparts knowledge or even as someone who models various intellectual virtues, but as a facilitator: someone who is a catalyst and guide of students’ own processes of learning and transformation. Facilitation does not necessarily indicate a passive stance. Socrates’ midwifery, for example, involved a strenuous attempt to bring his interlocutors to the insight that they did not truly know what they thought they knew. Without this insight, Socrates contended, we lack the genuine desire to learn which makes learning possible.

If we look more closely at the process by which Socrates guided his interlocutors to this insight we

see the roots of yet a third conception of teaching. To help his interlocutors acknowledge their ignorance, Socrates does more than question assumptions and provide counter-arguments. Socrates quotes poetry and myth, conducts thought experiments and live demonstrations, and makes use of self-deprecating irony, biting sarcasm, and gentle humor. When one looks closely at this diverse and shifting set of diverse pedagogical moves, it seems misguided to speak of a Socratic method, per se. Socrates’ actions do come into focus, though, when we view his teaching first and foremost as relational, as responsive to his interlocutors’ particular states of mind and the rhythm of their unfolding interaction. (Higgins 1995) As a teacher, Socrates displays not only logical acumen, but also great interpersonal sensitivity and emotional range. He knows when to be serious and when to be playful, when to be harsh and when to be gentle, when to bring an insight home and when to let learners have more distance from the topic at hand.

In sum, Plato presents us with a rich portrait of a singular teacher. In the fertile example of Socrates, we see teaching figured as learning, as facilitation, and as relation. Let us now consider the developments in each of these conceptions since the time of Socrates.

TEACHER AS LEARNER

Many philosophers of education have suggested that teaching is above all an act of learning. John Dewey (1916, 160), for example, suggests that education is a “shared activity” in which “the teacher is a learner, and the learner is, without knowing it, a teacher—and upon the whole, the less consciousness there is, on either side, of either giving or receiving instruction, the better.” According to this conception, to inspire others to learn requires that one be a learner oneself, demonstrating both the passion and methods of learning. The best teachers are exemplary learners.

This is the conception of the teacher that has animated the long tradition of liberal learning. In the scene of liberal education, the teacher is understood as one more learner joining the task of reading and interpreting a text, and discussing the issues it raises. As the lead learner, the teacher models how to approach the text, how to frame key issues, how to

raise and meet objections, and so on. Liberal learning concerns issues about which intelligent people can and should disagree, for example, What is culture? How does the present differ from the past? What is the place of thinking and of feeling in human conduct? Thus, it is not the liberal educator's job to instruct students what to believe on such questions. Rather, the teacher in liberal education models how to believe and to doubt, how to distinguish and to synthesize, and how to do all of these things intelligently. In demonstrating his or her own critical, imaginative, and passionate engagement with texts, the liberal educator shows students how to enter and profit from the ongoing conversation that is culture.

More recently, this idea that students must develop their own understanding of the material has come to be known as constructivism, and our sense of the material to be understood has shifted. Many now eschew the "great books" of liberal learning, asking students to inquire instead into nature or social relations. Nonetheless, the notion of the teacher as learner still applies. If learning is a process of inquiry, rather than the transmission of a set of inert facts, the teacher must be able to demonstrate for the student what it means to inquire. Paulo Freire (1970), for example, criticizes what he calls the "banking concept" of education in which teachers are seen as depositors of knowledge in the minds of students. He contends that the teacher-student relationship should be thought of as a joint, dialogical inquiry in which the teacher also learns and the students also teach. In one variation on this idea, the teacher is thought to be a co-inquirer into the subject matter. In another, the teacher is seen as a student of education itself, studying what her students need and how they learn. In yet a third variation, the teacher is viewed as a public intellectual, someone who views the classroom as a prime location to learn about social reproduction and transformation and to participate in social change (Giroux 1988).

In an important new line of research (Dunne and Hogan, *in press*), teaching is seen as an ethical practice in the sense given to that term by Alasdair MacIntyre (1981). According to this view, practices are not only sites of professional know-how, but ongoing inquiries into specific modes of human excellence. Practices give their practitioners a concrete context for the development and display of specific

virtues. To join a practice is to be situated as an apprentice to exemplary practitioners past and present, learning not only how to achieve excellence in the practice, but also how to join the conversation about what excellence means in this particular sphere and what that teaches us about human flourishing in general. To become a teacher, in this view, is to join a more-than-2,000-year-old conversation about the ends and means of human development. And it is to inherit specific resources for shaping a good life, a teacher's life.

TEACHER AS FACILITATOR

According to the facilitative tradition, the hardest thing to achieve as a teacher is neither that of being an expert knower nor that of being an exemplary learner. It is to step back and keep the focus on the students. As Robert Boostrom (1997) points out, it is not always easy for teachers to give up on their position as expert. According to the philosopher Martin Heidegger (1889–1976), it is the rare teacher who accomplishes that most difficult feat: to let learn (1968). Of course, this does not mean inaction on the part of the teacher. In the facilitative tradition, the teacher is responsible for setting up an environment that is conducive to learning.

For Jean-Jacques Rousseau (1712–1778), the most significant figure in this tradition since Socrates, creating such an environment is primarily a matter of shielding the child from corrupting influences. Rousseau (1979) believed that children learned best from the promptings of their own internal development and from necessity. He sought to delay as long as possible the child's exposure to the received ideas of books and the ego-driven world of social hierarchies. To facilitate Emile's learning (the eponymous fictional pupil of his major work), he purifies his social world to one carefully controlled relationship with his tutor and a few scripted interactions with others. He also forces Emile to learn from the consequences of his actions, for example, letting Emile experience a cold night's sleep after breaking a window in his room.

John Dewey (1859–1952) is the next major figure in this tradition. Here he gives voice to its major premise: "The educator's part in the enterprise of education is to furnish the environment which stimulates responses and directs the learner's course"

(Dewey 1916, 180). Dewey urged teachers to create environments that were not only responsive to the current interests of the child, but also that enrich and guide those interests. In other words, the educational environment reflects both the psychological and the logical side of the subject matter. Teachers construct environments that enable students to discover the subject matter, to approach it from the perspective of their own unfolding interests. At the same time, the teacher makes use of the logical organization of the subject matter, the fruit of the community's past discoveries, now synthesized, to ensure that the student's explorations are fertile.

Thus, creating the right environment requires significant effort, including awareness of how the student views the world and a deep understanding of the subject matter. For Paulo Freire (1921–1997), these were one and the same thing. Freire (1970) argued that teaching required close anthropological study of the lived experience of one's students, so that one could represent this experience to the students as a problem demanding inquiry rather than an inevitable fate to be tolerated.

TEACHING AS RELATION

According to some philosophers of education, the prime catalyst in education is the manner in which a teacher responds to and relates with the student. (Bingham and Sidorkin 2004) Within this tradition, we can identify two different camps, each emphasizing a different facet of Socrates' relational example.

For some, the example of Socrates shows that teaching is primarily a dialogical relation. According to this view, one must understand and cooperate with one's partner in dialogue, but the goal of the dialogue is not to understand each other. In the conception of dialogue that runs from Socrates to Hans-Georg Gadamer (1990–2002), the flow of dialogue is not dictated by the needs of the other so much as

it is by the unfolding logic of the subject matter under discussion. Nicholas Burbules (1993) helpfully delineates four varieties of such educative dialogue. Dialogues, he notes, can be either competitive or inclusive in spirit. Meanwhile, each of these types of dialogue itself admits of two variations, depending on whether it is oriented toward a conclusion or is inherently open ended.

Other educational thinkers have wanted to emphasize the interpersonal and psychological aspects of dialogue, inspired by the interpersonal attentiveness of Socrates, if not always approving of some of his rough handling of his interlocutors. The major modern thinker in this area is Martin Buber (1955), who viewed education as a special kind of attunement with and responsiveness to the other. Drawing on Buber and the feminist moral theory of Carol Gilligan (1982), Nel Noddings (1984) has described teaching as a caring relation. For Noddings, the key to caring is engrossment in the other. This is a kind of attentiveness that requires one to displace one's own motivations and to see the other unclouded by abstractions.

Postmodern philosophers of education have sought to extend each of these lines of thought with a cautionary note. Drawing on the work of Emmanuel Levinas, Jacques Derrida, and others, they have pointed out how the idea of dialogue presumes a kind of reversibility of perspective that may in fact be impossible. Likewise, they worry that pursuing the kind of receptiveness advocated by Buber and Noddings may lead the teacher to presume that she knows who her students are and what they want. To avoid the violence of assimilating the other, with their difference from our preexisting categories, postmodern theorists urge us to emphasize the fundamental unknowability of the other, while at the same time avowing our duty to respond to the other in need.

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EDUCATIONAL POLICY AND REFORM

Public education plays a unique role in our society. Policymakers frequently call upon public schools to address a wide range of social and economic problems. A major federally commissioned report, *A Nation at Risk* (National Commission on Excellence in Education 1983), observed that “Our Nation’s schools . . . are routinely called on to provide solutions to personal, social, and political problems that the home and other institutions either will not or cannot resolve.” Numerous examples can be cited. The *National Defense Education Act* was passed in 1958 in response to the Soviet Union’s successful launching of its satellite, Sputnik. Efforts to desegregate schools during the civil rights era were seen as major steps toward creating a society of racial equality. Investment in mathematics and science was called for when business reports showed labor shortage in technical fields. Global competition in recent years has prompted policymakers to raise academic standards.

The tendency to rely on public education as solutions to the nation’s problems is facilitated by several features in our system of governance. First, the American public strongly believes in local control to formulate strategies addressing collective problems. School is seen as a key local institution that is governed by local electoral process. Consistent with this democratic creed, political leaders tend to recruit public schools to contribute to problem solving, particularly on issues that require changes in the long run.

Second, proposals on education policy can be initiated from any of the three levels of government. In the United States, the federal, state, and local governments have shared responsibilities over education and thus enjoyed certain degrees of policy freedom. Any one of these three levels of government in our decentralized educational system can enact policy changes in response to their priorities at any given time. The 14,000 local school boards and the fifty

state boards exercise a substantial degree of autonomy in shaping policies. For example, states took several decades to enact their own compulsory attendance legislation. States also differ in their curriculum standards. While a few states maintain creationism as part of their science curriculum, most states have focused on evolution.

Third, education is shaped by the broader pluralist system of policymaking, where organized interests and citizenry play a legitimate role. Competing interests enjoy multiple, informal access from agenda setting through the legislative and budgetary phase. Third-party influence, such as media, can further articulate community concerns. Not surprisingly, conflicts over educational issues arise frequently. Educational policies are formulated as efforts to mediate competing views and contending interests. An increasingly vocal taxpaying public pays attention to how schools dollars are spent, for example, when a substantial portion of families no longer has children in the public schools. Further, the aging population may consider public education in competition with transportation, public safety, community development, and health care for budgetary allocation. During the 1990s, business-organized lobbying groups were successful in pushing for higher academic standards and stronger accountability measures. In districts with a large percentage of failing public schools, new political coalitions have emerged to seek for alternative ways of delivering schooling services, including charter schools and contracts with private management firms (Hill et al. 2000).

Clearly, education is an important policy arena. Several policy features merit public attention. First, public education constitutes a large portion of the government’s budget. About one-third of state and local tax revenues are allocated to public schools. School districts across the nation hire 2.5 million teachers who provide instruction to more than 45

million students, or 89 percent of the nation's student population in both public and private sectors.

Second, education draws from the same fiscal pie that is available to all public policy domains. Public education has to compete with other priorities in the governmental agenda, including post-secondary education, health care reform, welfare restructuring, and correctional facilities. In many states, spending for correctional facilities and health care grew much faster than spending for K–12 education in recent years.

Third, educational policy involves debates that are deeply embedded in our value systems. Contending beliefs include equity issues for classes of disadvantaged citizens, political accountability that respects the tradition of local control, constitutional guarantees of individual liberty, commitment to efficiency in service provision, and maintenance of democratic representation. Governmental institutions and their leaders are expected to manage competing values and reconcile contending interests in a changing society.

Fourth, education is a shared governmental responsibility. All three levels make decisions that affect schools. For example, school revenues come from all three levels of government. While federal grants account for about 6–7 percent of school spending, state contribution has stayed close to 50 percent since the early 1990s. To be sure, different levels of the government set their funding priorities. While the federal government has been a leading promoter of equal educational opportunities since the 1960s (as discussed in a later entry within this chapter), states exercise their constitutional authority by defining the powers of the local school boards, setting curricular standards, approving teacher certification requirements, and regulating taxing and spending practices of districts.

Fifth, decisions made by governmental institutions at different levels have an impact in learning opportunities for all children. Schools and classrooms are nested in a complex, multilayered policy system (Barr and Dreeben 1983; Wong 2003). The U.S. Congress and the state legislatures define the purpose of educational policy, formulate programmatic actions to meet the goals, and allocate resources to eligible segments of the student population. In administering programs, educational agencies can create opportunities and impose constraints on curricular and instructional activities in the school building. In some

circumstances, federal and state programs provide supplemental resources to students who come from at-risk environments. In other cases, governmental regulations tend to encourage teachers to pull out groups of students from the regular classroom setting for remedial instruction. In short, there is a connection between governmental decisions and classroom practices.

Given the policy prominence of public education, this chapter will examine several issues: How does educational governance shape policy and reform? What are some of the key reform initiatives in recent years? How important is the policy to promote equal access and school funding equity? What are the major initiatives to improve accountability and turn around low performing districts and schools? And why is there a growing interest in using parental choice as a reform strategy? This chapter will highlight the research and policy implications in each of these issues.

Kenneth K. Wong

GOVERNANCE AND EDUCATIONAL POLICY

Educational policy is shaped by our federal system of government. Federalism creates a decentralized structure of educational governance. It facilitates a division of power and authority among the three levels of government, namely, federal, state, and local. This entry will discuss the changing federal involvement in education, the states' constitutional authority, and the tradition and practice of local control.

EVOLVING FEDERAL ROLE

Historically, the federal government did not play an active role in education. Framers of the U.S. Constitution relied on the principles of "dual federalism." Article I, Section 8 of the U.S. Constitution specifies the "enumerated powers" that Congress enjoys and the Tenth Amendment granted state autonomy in virtually all domestic affairs, including education. Sovereignty for the states was not dependent on the federal government but instead came from the state's

citizenry. Consistent with this view, in *The Federalist Papers*, which were first published during 1787 and 1788, James Madison suggested a line of demarcation between the federal government and the states (Hamilton, Madison, and Jay 1961). He wrote, “The federal and state governments are in fact but different agents and trustees for the people, constituted with different powers, and designed for different purposes.” (Federalist Papers, No. 46, p. 296). The dual structure was further maintained by local customs, practice, and belief. It came as no surprise that in his description of the American democracy in the mid-nineteenth century, Alexis de Tocqueville (2000) opened his seminal treatise by referring to the local government’s “rights of individuality.” Observing the state-local relations in the New England townships, de Tocqueville wrote, “Thus it is true that the tax is voted by the legislature, but it is the township that apportions and collects it; the existence of a school is imposed, but the township builds it, pays for it, and directs it.” (p. 63). The division of power within the federal system was so strong that it continued to preserve state control over its internal affairs, including the de jure segregation of schools, for many decades following the Civil War.

The federal government began to take a more active role in education following the Second World War. The Cold War competition saw the passage of the *National Defense Education Act of 1958* shortly after the Soviet Union’s satellite, Sputnik, successfully orbited the earth. At the same time, the 1954 landmark Supreme Court ruling on *Brown v. Board of Education* and the Congressional enactment of the 1964 *Civil Rights Act* sharpened the federal attention to the needs of disadvantaged students. Consequently, the federal government adopted a major antipoverty education program in 1965, Title I of the *Elementary and Secondary Education Act* (ESEA).

The ESEA, arguably the most important federal program in public schools in the last four decades, signaled the end of dual federalism and strengthened the notion of “marble cake” federalism where the national and subnational governments share responsibilities in the domestic arena. Prior to the 1965 law, there was political deadlock on the role of federal government in Congress. States outside the south were opposed to allocating federal funds to segregated school systems. Whereas some lawmakers refused to aid parochial schools, others wanted to

preserve local autonomy from federal regulations (Sundquist 1968).

The eventual passage of ESEA and other social programs marked the creation of a complex intergovernmental policy system that is unique in American history. To avoid centralization of administrative power at the national level, the Congress increased its intergovernmental grants to support state and local efforts to carry out federal policy objectives. During the presidency of Lyndon Johnson, single purpose (or categorical) programs, including Title I, increased from 160 to 380. By the end of the Jimmy Carter administration in 1980, there were approximately five hundred federally funded categorical programs. Particularly important was the redistributive focus of many of these categorical programs that were designed to promote racial desegregation, protect the educational rights of the handicapped, assist English language learners, and provide supplemental resources to children from at-risk backgrounds. Federal engagement in these issues remained highly visible despite partisan politics throughout the presidencies of Ronald Reagan, George H. Bush, and William Clinton.

As the Congress enacted the *No Child Left Behind Act of 2001*, President George W. Bush further expands federal involvement in educational accountability for all children. The federal law requires annual testing of students at the elementary grades in core subject areas, mandates the hiring of “highly qualified teachers” in classrooms by 2005/06, and grants state and local agencies substantial authority in taking “corrective actions” to turn around failing schools. Further, the law provides school choice to parents to remove their children from failing schools. Equally significant in terms of federal intervention is the legislative intent to close the achievement gaps among racial/ethnic subgroups as well as income subgroups. To support these efforts, the federal government increased its allocation by \$1.7 billion to a total of almost \$11 billion in the Title I program, in addition to over \$900 million for early reading initiatives.

STATE CONSTITUTIONAL AUTHORITY

While the federal role addresses redistributive issues, the state assumes constitutional and policy authority over much of the jurisdictional territory of public edu-

cation. Clearly, our constitutional framework enables each of the fifty states to maintain its own educational system. From a constitutional-legalistic view, localities are political subordinates of the state, and local powers can be granted only with the consent of the state legislature. Despite interstate variation in governing tradition and culture (Elazar 1972; Wirt 1977), local districts are seen as agencies of the state educational system. The states enjoy substantial control over compulsory attendance, accreditation, curriculum, graduation standards, and such housekeeping matters as calendar, records, and accounting procedures.

In practice, once their legal status has been established, local school boards enjoy substantial control over critical resources that can be used to sustain their existence. School districts can select their own political representatives, decide on fiscal policies, and choose the scope of their services. Local districts generally maintain discretion over district organization, guidance and counseling, pupil-teacher ratios, staff recruitment, and extracurricular activities. Nonetheless, on school funding and accountability issues, as later parts of this chapter show, the balance of power has shifted toward greater state control in recent years.

At the state level, the selection of the state school board, though far from uniform across the fifty states, is largely an appointive process. Sixty-two percent of the governors appoint the state school boards. This group of states includes Florida where its governor appoints a state board that oversees both public schools and colleges. In Georgia, the state board lost substantial power in part due to a 1996 legislation that shifted power from the board to the superintendent and in part due to gubernatorial decisions to replace nine of its current eleven members (see Jacobson 1997, 21). In Illinois, the governor gained new power to appoint a chair of the state board of which membership had been cut from seventeen to nine. Gubernatorial appointment may be based on different formal criteria. For example, New Jersey stipulates that three of the thirteen board members must be women. Illinois provides partisan and regional balance in its state board.

Besides the governor, other political institutions are also involved in the selection of school boards. The legislature and the governor in three states jointly appoint their boards. In South Carolina, while the governor appoints one member, the state legislature appoints the remaining seventeen members. In Mis-

issippi, the governor selects five members and the legislature the remaining four members. In Rhode Island, nine members are appointed by the governor and two by the legislature. Further, the state board in New York is solely appointed by the legislature. Further, three states (Indiana, New Mexico, and Ohio) use a combination of gubernatorial appointment and the elective process. For example, while ten of the eleven board members in Indiana are appointed by the governor, the chief of the board is elected. Indiana also takes into consideration partisan balance on the board and requires it consist of four educators. Only 20 percent of the states have an elected board. Of these ten states, four use a nonpartisan ballot and five rely on partisan election. In Alabama, which has a partisan-elected board, the governor serves as the board president. In Washington, the members of the state board are elected by local school board members. Interestingly, Wisconsin and Minnesota no longer have a state school board.

The scope of the state board has gradually broadened. Six states grant the state board an authority that includes post-secondary education. These include Florida, Idaho, Missouri, Oregon, New York, and Pennsylvania. In Florida, Governor Jeb Bush appoints a “K–20” board that is designed to improve policy coherence at all levels of education. In New York, the board oversees public schools, higher education, cultural institutions, and licensed professions.

While most governors appoint their state school board, the state board selects most chief state school officers. As of January 2002, the board appoints its school chief in twenty states while the governor appoints the top executive in only ten states. Fourteen states elect their school chiefs. While eight hold partisan election, six use nonpartisan ballot to select their top school officer. Consistent with its populist tradition, the western region seems more likely to have a popularly elected chief school officer. Of the fourteen states that elect the school chief, seven are located in the western region.

In considering the selection methods for both the board and the school chief, several systems of governance seem to emerge. There is no state that maintains a popularly elected school governance system, namely an elected board and an elected chief officer. The closest example is Washington, where the school chief is popularly elected but the board is elected by the local school board members. In contrast, the most

common method of selection, practiced in twenty-four states, is an appointive system of both the board and the school chief. The remaining states tend to use a combination of selection methods. Twelve states have an appointed board but a popularly elected school chief. Nine states have an elected board but an appointed state school officer.

LOCAL CONTROL

Historically, states moved toward district consolidation to provide more uniform educational services in a more economical manner. Smaller districts often experienced difficulties in recruiting qualified teachers, upgrading physical facilities, and maintaining an enriched curriculum. There are about 14,000 independent school districts governing over 90,000 schools across the nation. In the 1940s, there were almost 109,000 school districts. School district consolidation occurred at a much faster pace than that of the local governments overall. While school boards constituted 70 percent of all local governmental bodies in 1942, they accounted for about 15 percent in 2002. Although four out of five school districts are responsible for fewer than 3,000 students, the average size of districts has grown over the years. Today, about a third of the districts are located in five states: California, Texas, Illinois, Nebraska, and New York.

While the number of school districts has changed significantly over the years, district governance and administration have remained remarkably stable. The dominant mode for the selection of school board members is a nonpartisan election held in an off year from the local general election. Board members can be elected from subdistricts or district wide (at-large). Term limits are not usually placed on board membership. These elections are rarely contested and usually involve very low voter turnout. Even fewer voters are likely to attend board meetings, which are often held on a monthly basis. Given the low political interest in school board politics, many researchers note the dominance of civic elites and interest groups in these elections. However, a few exceptions are found in major cities. Although an overwhelming majority of school boards are popularly elected, those in Baltimore, Boston, Chicago, Cleveland, New York, Oakland, Philadelphia, Trenton, and several other cities are appointed either by the mayor or jointly by the mayor and the governor.

The existence of independent school boards is supported by several factors. First, the school board as an autonomous institution is embedded in strongly held public beliefs in democratic, nonpartisan control over public education. The public has traditionally equated local control with district wide board authority in the constitutional-legal framework of educational governance. In contrasting private and public schools, Chubb and Moe (1990) characterized public-school governance as “direct democratic control.”

From an economic perspective, the presence of multiple school systems resembles a quasi-market arrangement that can be cost efficient to the consumers. States and localities with multiple suppliers of services promise a better fit between consumer-taxpayers’ preferences and the level and quality of local services. As Tiebout’s (1956) classic work suggested, taxpayers make residential decisions that would maximize the benefits they expect to obtain from public services and minimize the level of taxes that they have to pay for those services. In particular, middle-class taxpayers who can afford to spend more on goods and services are keenly concerned about the quality of basic services, such as schools. As Hirschman (1971) argued, they are more ready to exit when they perceive a decline in those municipal services that they value. Studies of district-level performance in metropolitan areas suggest that inter-district competition can improve service quality (Hoxby 1998). The out migration of middle-class families to suburban school districts seems to provide the empirical support for this line of argument. Recent establishment of quasi-public boards that oversee charter schools also shows the increasing popularity of parental choice when the neighborhood schools are failing (Hill 1997).

Managerial consideration constitutes a third reason for local control. Thomas Shannon (1992), former executive director of the National School Boards Association, has argued that school boards serve several indispensable functions for the common good. They develop strategic plans, adopt an annual budget, manage the operation of the system, comply with federal and state laws, evaluate educational programs, arbitrate complaints from citizens and employees, and represent the collective interests of the entire district. The boards also negotiate contracts with teachers’ unions and serve as managerial buffers between individual schools and state and federal agencies.

Within a local district, the daily operation relies heavily on a functional school bureaucracy, often referred to as the central office. The growth of a district-level bureaucracy throughout much of this century has contributed to a strong professional management model particularly in the urban districts. At the top of the central bureaucracy is the school superintendent, who assumes educational, managerial, and fiscal responsibilities of the entire district. To provide daily services to a large number of students, the school system tends to adopt a bureaucratic structure—centralization of decisionmaking, routinization of task performance, and standardization of resource generation and allocation (Bidwell 1965). The urban district resembles a complex hierarchical structure with centralized authority. The organization's insiders enjoy autonomy from outsiders' influence because the former possesses expertise and information on how the system operates. External pressures from state and federal government are largely accommodated through an internal division of labor, which is characterized by specialized bureaus where program administrators are insulated from one another. When allocating resources, the lay school board largely follows the suggestions made by professional administrators. Educational decisionmaking, in short, is largely embedded in the organizational milieu of the district (Tyack 1974; Cuban 1990; Callahan 1962; Danzberger, Kirst, and Usdan 1992).

To be sure, the urban context poses a particular challenge to educational governance as the public increases their demands for better student performance in recent years. Environmental constraints on urban schools are readily discernible in socioeconomic trends. First, many urban districts have experienced enrollment decline in recent decades. Second, demographic changes have reshaped the racial composition of the student body. In urban districts, a substantial portion of their students now comes from minority backgrounds. Third, as middle-class families relocate to suburban communities, urban schools experience a continual growth in their low-income student population. The urban political reality is equally challenging to public schools. While cities are losing their influence in the state legislature due to population decline, teachers' unions continue to place budgetary demands on the district. In other words, policymakers and educators in urban districts must confront a bundle of political and social chal-

lenges that are embedded in the broader societal structure—residential choice, locational density, suburbanization of political power, and socioeconomic characteristics of the school population.

To counter these challenging trends, urban school districts have attempted governance reforms aimed at raising school quality and outcome-based performance. There are, to be sure, substantial intercity variations in the scope and nature of the school reform strategies. Frequent turnover of urban superintendents has contributed to a policy pendulum that sways from one end of the continuum to another. A recent example is Memphis, a district touted for its effectiveness in implementing “whole school reform” for several years. Within a few months in office, the succeeding superintendent conducted an internal audit and eliminated all the “whole school strategies” in the district. Clearly, programmatic variation merits a more systematic understanding of the political underpinnings that frame the terms of school reform.

The rise of accountability-based initiatives has changed the landscape of school governance in urban districts. Accountability has created new political demands for “generalist” leaders, such as mayors and governors, to exercise more direct control over the central bureaucracy in education. The new accountability focus also raises questions on whether interest groups are able to conduct their business as usual without losing credibility and support from the public. An increasing number of parents, particularly in low-income minority neighborhoods, are supportive of choice-based programs that promote competition in the educational sector. In other words, innovation in urban school governance may signal a new phase of institutional transition where politics of the status quo are subject to mounting pressure to incorporate the new rules of accountability.

Kenneth K. Wong

POLICY TO PROMOTE EQUAL EDUCATIONAL OPPORTUNITIES

Public education faces the challenge of income inequality and racial/ethnic disparities in our society. In the early 2000s, one-third of the nation's public-school

student population is eligible for free and reduced-price lunches. In the nation's largest central city school districts, over 60 percent of the students are eligible for the school lunch program. African American students constitute over one-third of the enrollment in large central cities as compared to 17 percent nationwide. A similar trend is seen in the growing Latino population. Schools that have a higher concentration of minority and low-income students are less likely to recruit qualified teachers, offer strong curricula, and maintain high academic performance.

The pervasive impact of poverty and racial/ethnic inequality in public schools raises a fundamental tension in our federal system of government. Given our decentralized system of governance, what is the role of government in addressing social redistributive needs? Decentralization is clearly prevalent in public education, where power and decisions are dispersed among fifty states and 14,000 districts. Historically, state and local governments paid limited attention to the educational needs of disadvantaged students, whose parents were often not well organized and whose neighborhoods were less likely to be economically vibrant. States and districts tended to marginalize schooling opportunities for segments of at-risk populations.

The structural tension between decentralization and equity constitutes a policy challenge. On the one hand, the U.S. Constitution recognizes the rights of the states to handle their own affairs, including public education. On the other hand, there is pressing public responsibility to address the needs of those who are less fortunate. An understanding of how the government manages this tension between local control and social responsibility lies in the distribution of power and functions between layers of government. This entry will examine the evolution of the federal role in formulating redistributive policy to address income and racial/ethnic disparities in public schools. Particular attention will be given to the largest federal policy, Title I of the *Elementary and Secondary Education Act*. Patterns of conflict and cooperation between the federal and the local government in redistributive education policy will also be discussed.

FEDERAL GRANTS SYSTEM

As discussed in the section on governance and policy, the federal government has assumed greater respon-

sibility to promote equal educational opportunity. Financial commitments and support from state and local government on redistributive policy, however, have remained somewhat mixed over time.

Research on federalism has looked for structural sources in explaining why antipoverty policy is more likely to come from the national government. The federal government enjoys a broader revenue base in which taxes are primarily raised on the ability-to-pay principle, and it represents a constituency with diverse demands, including views that are not often supported by the majority (Oates 1972; Peterson, 1995; Wong 1999). In other words, it has both the fiscal capacity and the political justification (often facilitated by organized interest groups) to take a more active redistributive role.

Federal engagement in redistributive policy is depicted in its spending priorities. According to an analysis of federal spending in public schools between 1970 and 2002, Wong found that federal aid to redistributive programs showed persistent growth in real dollar terms (using 2002 dollars). During the thirty-two-year period, these programs increased from 36 percent to 63 percent of the total federal spending in elementary and secondary schools. The school lunch program, for example, increased its funding from \$299 million in 1970 to \$10,324 million in 2002. Head Start jumped from \$326 million to over \$6,500 million during this period. However, federal redistributive support slightly declined from 60 percent to 58 percent of the total federal school spending during 1985 and 1990. A similar decline occurred between 2000 and 2002 when special needs funding dropped from 66 percent to 63 percent of the total federal budget for public schools.

Further, federal redistributive grants have taken on several institutional characteristics that resemble a policy framework:

1. Grants-in-aid arrangement: where federal government provides the dollars and sets the programmatic framework, but the delivery of services is up to the state and local agencies.
2. Categorical or single purpose grants: where well-defined eligible students are the intended beneficiaries; only they would receive the services.
3. Supplementary and nonsupplanting guidelines: they are designed to guard against any

local tendency to shift federal resources away from the disadvantaged.

4. Bipartisan support: Special needs programs are often connected to well-entrenched political interests. For example, the child nutrition program (free lunch program) is supported by the agricultural business.
5. Incentives for local government to meet anti-poverty objectives: Federal funds are widely distributed to ensure broad political support. The territorial impact of federal grants has contributed partly to the popularity of Title I in Congress over time. For example, in the 1990s, the federal grant provided supplemental resources to 64 percent of all the schools in the nation, covering virtually every congressional district. Clearly, big city districts are not the only beneficiaries of compensatory education funds. Indeed, over 20 percent of federal aid goes to districts with fewer than 2,500 students. Districts with enrollments between 2,500 and 25,000 receive almost 45 percent of the funds. Because there are Title I programs in almost every congressional district, partisan conflict has generally been limited during the appropriations process.

While redistributive grants-in-aid have gained bipartisan support over time, this policy arrangement faces its most serious, albeit brief, political challenge in the mid-1990s. The 1994 midterm elections produced the first Republican majority in Congress in forty years. The new congressional leadership claimed a public mandate to shrink the federal role in social programs and to shift programmatic authority to state and local governments. The federal bureaucracy was depicted as a major source of waste of taxpayers' dollars, and the private sector as the solution to social inequality.

Political confrontation between the Congress and the President became highly visible in education policy during 1995. The Republican leadership, for example, proposed to significantly cut major redistributive programs, including Title I and bilingual education. To demonstrate its control over governmental appropriations, the Republican leadership shut down all federal agencies when the budget expired. In the end, however, the retrenchment tactics

backfired. Within two years, education policy regained bipartisan support in the Republican Congress.

Although federal redistributive education policy has survived its most serious political challenge, its effectiveness was increasingly called into question in a broadened climate of outcome-based accountability. The passage of the *Improving America's Schools Act of 1994* signaled the beginning of federal efforts to address accountability in its anti-poverty programs. This legislation aimed at reducing program isolation of at-risk students from their peers, created incentives for whole school reform, and required districts and states to use their system wide standards to assess the performance of at-risk students. The enactment of the *No Child Left Behind Act of 2001* further consolidates the federal expectations on outcome-based accountability in its redistributive educational policy. Schools and districts that fail to make adequate yearly progress (AYP) and reduce achievement gaps after several consecutive years are now subject to a series of interventions, including school choice and takeover by the state board. In short, federal expectations have broadened to include outcome-based accountability in redistributive initiatives.

IMPLEMENTATION LESSONS

Over the last forty years, the redistributive goals of the federal government, have received a mixed degree of support from state and local school boards. The following discussion on how local and state agencies implement and manage federal programs will provide useful information on the complexity of implementing redistributive goals in an intergovernmental policy system.

As part of the federal government's "War on Poverty," Title I of the 1965 *Elementary and Secondary Schools Education Act* (ESEA) was passed to provide financial assistance to local education agencies serving areas with high concentrations of children from low-income families. Although antipoverty remains the primary goal of Title I, its dominant policy objectives have broadened over time. The first two decades Title I policy primarily focused on fiscal accountability. The federal government required states and districts to use federal money only on schools with the highest concentrations of poverty, to spend as much money on Title I schools as on schools not receiving federal education dollars, and

to use Title I funds only as a supplement to local spending and not for general operating functions. Many states and districts found these federal requirements burdensome. By the 1980s, however, the cooperation between the federal government and local authorities brought about an easing of tight regulations and audits. This, in turn, focused attention on improving the quality of instruction and student achievement in Title I schools. The latest phase in the development of Title I was shaped by competing visions of how to raise student performance, including whole school reform, district-based support, and voucher programs.

The first phase of Title I implementation occurred during a period of policy formation and intergovernmental bargaining. Given the “newness” of the federal policy, it came as no surprise that state and local educational agencies did not fully comply with the federal intent. For example, a 1969 study conducted by the NAACP Legal Defense Fund found that federal Title I funds were being used for “general school purposes; to initiate systemwide programs; to buy books and supplies for all school children in the system; to pay general overhead and operating expenses; [and] to meet new teacher contracts which call for higher salaries” (McClure and Martin 1969). Similarly, Jerome Murphy’s (1971) analysis of Title I program in Massachusetts found state reluctance to intervene when local agencies divert federal resources away from the eligible populations. There was an absence of countervailing influences, such as Title I parental groups, to balance the entrenched organizational interests of state and local agencies. In other words, federal resources set aside for the at-risk populations often failed to go to the intended beneficiaries. Consequently, throughout the 1970s, the Congress adopted an exceedingly well-defined set of regulations to make sure that the intended beneficiaries receive the services.

As the federal government increasingly clarifies its anti-poverty intent, state and local agencies seem more ready to meet programmatic standards. Based on a comparative analysis of federal roles in education, health care, and housing and community development, P. E. Peterson, B. Rabe, and K. K. Wong (1986) documented various patterns of state and local response to federal expectations. Two major implementation patterns evolved during this second implementation phase. While intergovernmental

collaboration expanded in educational activities that were connected to economic growth, conflict continued to occur in redistributive programs. The lack of full federal funding to meet mandated standards can be a source of intergovernmental contention. The federal government, for example, promised to provide 40 percent of the funds for special education but, in reality, its funding level seldom went over 25 percent of the program cost. Local and state agencies were also reluctant to restructure their practices in part because they were not sure if the federal priority would remain unchanged over time. Perhaps most interestingly, Peterson, Rabe, and Wong observed that intergovernmental tension became increasingly manageable as professional communication and exchange grew with the passage of time. On Title I issues, local, state, and federal administrators were able to resolve disputes on funding irregularities. For example, following a 1973 adverse federal audit, Milwaukee school officials restructured their Title I administration to coordinate all fiscal decisions (Wong 1990). The district’s central office program manager was given additional authority over grant applications and regulatory compliance. Program monitoring at the building level occurred more frequently, and more extensive parental participation began. The Title I management was strengthened with the transfer of additional staff from the student testing office, the budget and planning division, and the office that oversees intergovernmental aid. As a result, many of the original federal charges were dropped. While the federal government initially asked for a refund of \$5.9 million in the 1973 audit findings, the school district was finally penalized for only \$120,266, covering inappropriate expenses on an “environmental education mobile laboratory” and “field trips” that had served all students, and Title I summer programs that had supplanted local funds. As a Title I administrator summarized the federal-district relationships since the administrative reforms, “Implementation problems are usually solved over the phone.”

COMPETING STRATEGIES

As policy makers sharpen their focus on standards and accountability, implementation shifts from fiscal audit to strategies that are designed to raise stu-

dent achievement in Title I policy. There are, to be sure, competing approaches for redesigning low-performing public schools.

Comprehensive School Reform

With the 1994 *Improving America's Schools Act* (IASA), Congress established an ambitious agenda for systemic improvement in Title I schools. Two provisions in this legislation have significant implications for schooling opportunities: (1) districtwide performance standards must apply to all students including those receiving Title I services; (2) schoolwide initiatives are promoted in Title I schools with at least 50 percent low-income students (this threshold was lowered to 40 percent in the 2001 *No Child Left Behind Act*).

Additional federal resources provided under Public Law 105-78 (*Obey-Porter Act* 1997) also facilitate schoolwide reform through support of the Comprehensive School Reform Demonstration Program (CSRDP) in Title I schoolwide programs. IASA and the *Obey-Porter Act* provide a set of legislative expectations that research suggests is essential to any high-functioning school. These expectations include:

1. A comprehensive assessment of student performance in relation to state/district subject-area content and assessment standards. States must develop measurable goals and benchmarks for meeting those goals.
2. An instructional program grounded in effective research-based methods and strategies.
3. High-quality professional development for teachers, aides, and other support personnel.
4. The development and implementation of strategies to increase parental and community involvement.
5. Strategies to identify how federal, state, local, and private resources will coordinate services to support and sustain the reform program.

Evaluation of the first phase of CSRDP reform has been mixed. One study observed that few reform models have substantiated their claims with hard evidence and that schools have adopted approaches without taking local circumstances into full consideration. Further, only three of the twenty-four whole

school reform models revealed strong evidence of positive effects. However, several case studies have identified effective strategies (Berends et al. 2002; Bodilly and Berends 1999; Stringfield et al. 1997). Based on a national study of thirty-two schools in nine urban and three countywide districts during 1998/99, higher performing schoolwide programs show strong implementation of student performance goals, academic standards and assessments, enriched curriculum, student-centered instruction, and evaluation of student performance (Wang, Wong, and Kim 1999).

Schoolwide Initiative

One aspect of Title I that received particular attention was its use of "pullout" practices. Students in Title I schools were often pulled out of regular classrooms in order to receive specialized instruction as a way to meet fiscal accounting requirements. This form of pulling out, or fragmentation, was counterproductive in meeting the educational needs of disadvantaged students. Further, school environments with a high proportion of poor students created concentration effects wherein both poor and non-poor students had a disproportionate educational disadvantage (Wilson 1987; Kennedy, Jung, and Orland 1986; U.S. General Accounting Office 1992).

To reduce fragmentation, address ineffective programs, and develop the overall capacity of Title I schools, Congress gradually approved schoolwide reform. In 1988, the Hawkins-Stafford Amendments required the coordination of Title I (called Chapter 1 at that time) with regular instructional programs and allowed schoolwide programs in schools that had at least 75 percent of the students falling below poverty level. The 1994 *Improving America's Schools Act* and the 2001 NCLB further encourage schoolwide initiatives. Title I schoolwide funding frequently supported:

1. Hiring additional staff to reduce class size and to strengthen the relationship between the school and families (Millsap, Turnbull, Moss, Bringham, Gamse, and Marks 1992).
2. Facilitating district activities that promote parental involvement, such as home-based education (Millsap et al. 1992).
3. Implementing or significantly strengthening

- staff development activities, including training in reading/language arts and mathematics instruction, as well as instruction for low-achieving students (Schenck and Beckstrom 1993).
4. Encouraging increased teacher input into decisions affecting the school; emphasizing teacher input into decisions about assessments.
 5. Introducing or significantly strengthening components related to curriculum and instruction, such as computer assisted instruction, supplemental instruction, provisions for extended school days and programs such as "Reading Recovery" and "Success for All" (Schenk & Beckstrom 1993; Millsap et al. 1992; National Association of State Coordinators of Compensatory Education 1996).
 6. Individualizing instruction to flexibly meet the needs of particular students as they arise (Stringfield et al. 1997; Millsap et al. 1992).
 7. Adopting practices associated with effective schools, including needs assessment, staff development, changes in classroom instruction, and changes in school management (Turnball, Zeldin, & Cain, 1990; U.S. Department of Education, 1992; Millsap et al. 1992). Effective school components strengthen principal leadership; produce meaningful, universally agreed upon goals; maintain a well-qualified staff; and develop organizational mechanisms that support problem-solving (Stringfield et al. 1997).

Although schoolwide reforms have become popular in high-poverty schools, coordination between Title I and the regular curriculum remains a challenge and often relies almost entirely on informal meetings; staff planning sessions rarely occur. Further, local districts remain largely uncertain about student needs assessment and program evaluation, areas where federal and state agencies can provide crucial technical assistance.

District Capacity-Building or School Choice

Further, the *No Child Left Behind Act of 2001* grants state and local agencies substantial authority in taking corrective actions to turn around failing schools. Corrective actions can take two reform

paths. One reform strand relies heavily on district and state capacity to play a supportive function. For example, Chicago, following mayoral control of the school system in 1995, has sharpened its focus on low-performing schools and their students. Low-performing schools were put on probation and, in a few cases, reconstitution. Failing students are required to attend summer programs and social promotion has been terminated. The combination of sanctions and support seems to have improved the overall conditions to support student learning in the district.

A different reform strand is school choice. Low-performing, inner-city schools have been the target of experimental vouchers, where parents are allowed to move their children from low-performing public schools to better-performing public and nonpublic schools (Kanstoroom and Palmaffy 2002). Following the state-funded voucher experiments in Cleveland and Milwaukee, Congress has approved a federally funded voucher program for low-performing, low-income students in Washington D.C. in 2004. Whether these programs will raise student performance remains a key reform issue.

In sum, as the federal government launches its ambitious educational plan in the *No Child Left Behind Act*, it remains to be seen whether local and state agencies are capable of meeting the goal of narrowing the achievement gaps among various subgroups of students (Peterson and West 2003; Kim and Sunderman 2004). Furthermore, accountability no longer remains within the confine of the educational professions. Accountability-based politics has been facilitated by "issue expansion" in education among governors, mayors, and state high courts. As school reform attracts greater attention from policy generalists, the degree to which these political actors contribute to the implementation of the 2001 federal *No Child Left Behind Act* remains a key issue. In the long term, the critical challenge lies in the commitment of our intergovernmental system to fully address income and racial/ethnic disparity. Toward this end, a functional, federally funded policy system will continue to play an instrumental role in mediating the tension between decentralized governance and social redistribution.

Kenneth K. Wong

STATE EFFORTS TO EQUALIZE SCHOOL FUNDING

Over the last two decades, state government has assumed primary fiscal responsibility in the delivery of K–12 educational services. Federal funds have fluctuated between 6 percent and 10 percent of public elementary and secondary education revenue in the last several decades. While local property tax remains a key source, its significance has steadily declined. In his longitudinal analysis of educational funding across the fifty states, Wong (1999) found that the state share was only 38.3 percent in 1959. A reversal of responsibility between local and state governments occurred during the late 1970s and early 1980s. Due to local fiscal retrenchment, responsibility for funding education shifted from local to state sources. Since the mid-1980s, the state share of total school revenues has either exceeded or stayed close to the 50 percent level. The prominence of state fiscal support signals the rising influence the state may have in determining how the K–12 education pie will be divided in response to competing demands in the policymaking process.

During the 1990s, states have maintained relatively stable levels of funding responsibility. The average percentage of elementary and secondary revenue provided by states is close to 50 percent, but there is much variation to be noted. At the extremes are Hawaii, in which almost 90 percent of elementary and secondary school revenue is provided by the state, and New Hampshire, where less than 10 percent of revenue came from the state in the late 1990s. (Hawaii is a special case because it has only one school district. Hawaii is not included in analysis of intrastate equity, that is, between districts, due to this feature of its public education system.) The ten states with the highest funding responsibility supply nearly two-thirds of their annual education revenue, while states with low-funding responsibility supply only about one-third of their state's education budget.

What accounts for the variation in state fiscal roles across the fifty states? What are the political and institutional factors that contributed to a greater state share of the school funding? And what are the political constraints?

CONSTITUTIONAL CHALLENGES

A key factor that accounts for higher level of state responsibility and contribution to education revenues lies in reform efforts to reduce funding disparity across districts. School finance litigation and court rulings have heightened the public attention to interdistrict inequalities (Wise 1972; Guthrie, Garms, and Pierce 1988; McDermott 1999). The structure of the plaintiffs' argument is seemingly straightforward—disparity in local taxable wealth is closely linked to spending differences, which contribute to inequities in schooling opportunities and quality. In virtually all judicial challenges, taxpayers in districts with low property values are found to carry heavy tax burdens. Students in these high-tax, low-wealth districts do not seem to benefit from the fiscal well being of the state as a whole.

Over the last thirty years, about half of the states have either faced rulings or are in the process of dealing with major law suits that challenge the constitutionality of the state finance system in public education. State high court rulings have shifted in favor of the plaintiffs in the last three decades. The number of decisions in favor of the defendant states declined from seven in the 1970s to six in both the 1980s and the 1990s. At the same time, the number of rulings that declared state funding systems unconstitutional increased from five in both the 1970s and the 1980s to eleven in the 1990s. In other words, while 58 percent of the decisions in the 1970s were in favor the status quo, 65 percent of the rulings challenged the status quo during the 1990s. In 1997 alone, the courts found the funding systems in Ohio, Vermont, and New Hampshire unconstitutional. Consequently, the eighteen states that violated their constitutions had to restructure their funding systems to reduce interdistrict inequity.

Judicial involvement in reforming the statewide school finance system started in 1967 in California when John Serrano and other parents, concerned about poor school services for their children in the Los Angeles area, brought a class action suit against the state of California. In the landmark ruling, *Serrano v. Priest*, often referred to as *Serrano I*, the California Supreme Court handed down a six-to-one decision in favor of the parents. According to this ruling, significant interdistrict disparities in school spending due to uneven distribution of taxable wealth

violated the equal protection provisions of the state constitution. In this case, sharp disparity in school spending existed between the wealthy Beverly Hills district and the nearby Baldwin Park district. While the former had a tax rate that was less than half as much as the latter, it was able to come up with twice as many school dollars on a per-student basis during 1968/69. As the court opinion stated, “affluent districts can have their cake and eat it too; they can provide a high quality education for their children while paying lower taxes. Poor districts, by contrast, “have no cake at all” (*Serrano v. Priest* 1971). Shortly after the court decision, the California legislature adopted what became the first of several school finance reform plans during the 1970s (Levin et al. 1972; Kirst and Somers 1981). At the same time, parent plaintiffs in several other states filed similar charges.

However, within two years, *Serrano I* was brought into question by a U.S. Supreme Court ruling on a case in Texas. In *San Antonio v. Rodriguez*, a five-to-four decision reversed a federal district court ruling (1973). It concluded that since education does not constitute a fundamental interest under the U.S. Constitution, the state can choose to preserve local control by not interfering in interdistrict fiscal inequities. In line with *San Antonio*, the supreme courts of Arizona (1973), Washington (1974), Oregon (1976), Colorado (1976), Idaho (1975), and several other states ruled that the statewide system did not violate the state constitution despite interdistrict funding inequity.

Despite *San Antonio*, the pressure for a more equitable allocation of state funds continued. Among the most significant state rulings that rejected the local control notion in *San Antonio* was *Serrano II* (1976) in which the California high court found the state funding system in violation of the state constitution. In the post-*Serrano II* period, the state supreme courts in Washington, Wyoming, and several other states also ruled as unconstitutional the state school financing system. Costly services for special needs students were brought to the states’ attention by big-city districts in several legal suits, including the 1978 *Seattle v. Washington*. Further, the court overturned the school funding systems in Texas (1989), Kentucky (1989), New Jersey (1990), Vermont (1997), Ohio (1997), and New Hampshire (1997).

The New Jersey ruling, in contrast to rulings in

most other states, paid particular attention to the concentration of social needs in inner-city schools. The court, in that case, recognized additional costs to address the needs of disadvantaged pupils in urban areas, estimating that programs to “reverse the educational disadvantage the children start out with” in urban districts would cost about \$440 million for the first year. Immediately following the court decision, the Democratic governor proposed \$2.8 billion in new and increased taxes to fund new services for the poorest schools. However, the reform and tax-increase plan was substantially compromised following key Republican wins in the gubernatorial and legislative election. After years of fiscal conservatism under governor Christine Whitman, the new Democratic administration of James McGreevey tries to address the intent of the Abbott decision despite an economic downturn in 2002.

State funding systems are increasingly being challenged from an “adequacy” perspective. Simply put, adequacy is the notion of providing a sufficient amount of instructional services so that students in low-income and at-risk circumstances can perform to meet state academic requirements. Starting in the mid-1990s, the Committee for Fiscal Equity, a citywide coalition of school advocacy groups in New York City, launched a legal challenge against the state for inadequate state funding to support students in the city in meeting the rigorous learning standards. In 2001 the trial court judge, Leland DeGrasse, ruled that the state should provide additional resources to the city so as to ensure that the students meet “an educated citizen standard.”

POLITICS OF LEVELING UP FUNDING SUPPORT

Judicial impact has not been confined to states where the funding systems were successfully challenged. Judicial pressure and, in some cases, perceived judicial challenge, have brought about reform in the state aid allocation. Utah and Washington, for example, have “foundation programs” establishing base-line revenue for students in poor districts. Districts are required to levy local property taxes up to a state-designated maximum. State dollars are channeled to make up the difference between local tax revenue and the minimum level of school spending. To supplement the foundation programs, many states have

adopted various complicated multi-tiered schemes. Under “power equalizers,” state aid guarantees an equal amount of local tax returns at different levels of tax levy. Further, several states primarily use “resource equalizers” that either specify the state share in local spending (known as percentage equalizers) or equalize the taxing returns of districts to finance schools (known as district power equalizing). Unlike foundation programs, equalizing systems do not place a fixed dollar limit on state support.

Increase in state aid is often a result of political bargaining. In order to gain a legislative coalition for a reform package, policymakers often adopt the “leveling up” strategy where no districts would suffer a reduction in their state support. Taxpayer dollars may be more widely distributed in two-party competitive states where political elites want to see their constituencies benefiting from state allocation.

In other words, an increase in state transfers to poor districts was seldom achieved at the expense of the more affluent communities. These electoral concerns had substantially shaped the final legislative outcome to address interdistrict inequity in Kansas, California, New Jersey, New York, and Washington (Berke et al. 1984). Texas offers a good example of the politics of sectoral rivalry. In 1989, Texas’ educational finance system was ruled unconstitutional. In a 9–0 reversal of the appellate court’s ruling, the state’s supreme court pointed out, “Districts must have substantially equal access to similar revenues per pupil at similar levels of tax effort. Children who live in poor districts and children who live in rich districts must be afforded a substantially equal opportunity to have access to educational funds.” (*Edgewood Independent School District v. Kirby* 1989). The ruling set off fierce partisan conflict and interest group contention that lasted three years. Having gone through various reform plans, the Republican governor and the Democratic-controlled legislature produced a compromise bill in 1990. Senate Bill 1 would have provided \$500 million more to the state’s 1,056 districts; in other words, no district would come out as a loser. However, the seemingly modest increase in state support and the scattering of these funds prompted a district judge to reject the plan (*Education Week* October 3, 1990). The prospect of school finance reform was substantially enhanced with the election of a Democratic Governor, Ann Richards, whose campaign included state edu-

cational funding as a key issue. After numerous delays and last-minute give and take, the governor and the legislature produced yet another legislative proposal in June 1993. The proposed reform called for the state to reallocate “excess” local tax revenues from the richest 10 percent of the districts to support the statewide teacher retirement system, thereby freeing more state funds for the poorest districts. The plan would use property taxes collected from the affluent communities to support schools in the fiscally depressed communities. While the plan was shaped by the Robin Hood principle, it did not commit additional state tax dollars. In other words, the state’s political leaders remain constrained by middle-class concerns and have made no serious attempt to call for an increase in state taxes to fund schools.

FEDERAL PROGRAMMATIC STIMULATION

The prominent state role in school spending has been further encouraged by the adoption of legislation that promotes equal educational opportunity. In this regard, federal school policy during the Great Society era of the mid-1960s and the 1970s has played a crucial role. While federal funds have contributed to less than 10 percent of all school revenues, federal programmatic guidance has clearly stimulated state activity in addressing special needs. Currently, all states are providing their own funds for special education. Twenty-eight states fund their own compensatory education, and twenty-one states support bilingual instructional services.

Starting in the 1980s, however, an increasing number of states shifted from the federal categorical model to an allocative system that weights special-needs students more heavily than others in the general-aid formula. This alternative arrangement was used by only five states during the mid-1970s (Leppert et al. 1976). The shift from categorical to pupil weightings occurred at a time when states assumed greater autonomy in the climate of Reagan’s New Federalism. By the 1980s, it had become popular in distributing funds for the handicapped. Of the states that provide compensatory programs, thirteen adhere to pupil weighting and fifteen retain categoricals. In bilingual education, six use pupil weighting, and fifteen allot funds through categorical grants.

States’ policy framework on equity issues can have

distributive consequences. For example, politics in California is substantially shaped by urban interests. Urban lawmakers dominate various influential legislative offices and committee chairmanships—the Speaker of the House, the President Pro Tempore of the Senate, the Chair of the Assembly’s Ways and Means Committee, the Chair of the Senate Appropriations Committee, and the Chairs of the Education Committees in the two houses (Timar 1992). To respond to their urban constituencies, the legislative leaders have funded a wide range of categorical programs. Indeed, on the average, 26 percent of the urban district’s total school funding are state categorical sources as compared to only 13 percent in the suburban districts. For example, while Los Angeles receives 31 percent of their school revenues from state categoricals, Palos Verdes only obtains 8 percent of the funds from categorical programs. In the case of California, state allocation has been beneficial to the urban districts.

LOCAL TAXPAYERS MOVEMENT

The pressure toward a greater state role has been enhanced by citizen-based campaigns against local increases in property-tax levy. Within five years following California’s Proposition 13, well over half of all states enacted some form of legislation curbing governmental spending and restricting property-tax levy increases. Between 1976 and 1990, thirty-six states experienced a property tax revolt (Mullins and Joyce 1995).

Indeed, signs of taxpayer opposition to school levies had begun to emerge prior to the passage of Proposition 13 in California in 1978. As early as 1970, a majority of school bond requests had failed to be approved by the voters at the nationwide level (Piele and Hall 1973). In California, for example, local taxpayers were so dissatisfied with a sharp increase in local school contributions during the Reagan governorship that, between 1966 and 1971, they rejected 50 percent of all local tax increases for school operation and 60 percent of the school bond levies for capital improvements (Levin et al. 1972). Discontent among property-tax payers became more widespread during the time of the much-publicized campaign of Proposition 13. According to a national Gallup Poll at the time of Proposition 13, when asked to identify their dissatisfaction with various taxing sources for public schools, 52 percent of the respon-

dents mentioned property tax, as compared to only 20 percent citing state sources (Phi Delta Kappa 1984). In 1978 alone, voters in California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, and several other states pushed for limitation of property-tax increases. Consequently, major property-tax limitation measures were adopted in California, Idaho, and Massachusetts.

Where the local taxpayer movement is well organized, there is evidence that the state begins to assume greater financial responsibility for local school cost (Williams 1982; ACIR 1980; Gold 1985; Gold 1983). After the passage of Proposition 13, California’s state share in nonfederal school revenues jumped from less than 50 percent to more than 70 percent. The state share also went up in Massachusetts and Idaho to make up for the lost local revenues after the adoption of tax limiting measures. The role of the state becomes more complicated where spending limits on both the state and local sources were adopted, such as in Colorado, New Jersey, and Tennessee. In these states, it is more likely that both state and local spending on education may exhibit a slow growth pattern. However, a faster rate of decline at the local level may result in an increase in the percentage of the state share.

Taxpayers’ concerns can illuminate territorial divisiveness. Illinois, during 1992 and 1997, provides a good example of how school finance reform can be frustrated by fragmentary politics. In 1992 voters opposed a constitutional referendum that would direct the state to be the primary funder in public education. The initiative was supported by 57 percent of the voters, yet 3 percent short of what is needed to enact a constitutional referendum. As expected, support was the strongest from Chicago and opposition came mainly from the surrounding middle-class suburbs. Indeed, the city-suburban rivalry is exacerbated by racial and income differences. While whites constitute only 12 percent of the enrollment in the Chicago Public Schools, students in the suburban schools predominantly come from white, middle-class families. With a Republican governor who is fiscally conservative and the senate under the leadership of a Republican from a middle-class suburb west of Chicago, it seems unlikely that the state legislature would launch any major reform in school finance. Then politics took a dramatic turn in 1997 when the governor reversed his earlier position on school fi-

nance reform. When the legislature rejected his proposal to increase state income tax to lower the local tax burden in funding schools, the governor returned with a new reform package that would rely on users fees and sales taxes. The 1997 “compromised” reform legislation would guarantee a foundation level of \$4,225 to every student in the state for three years beginning in the fall of 1998. At least for a brief period of time, fragmentary politics gave way to coalitional politics in Illinois.

Michigan, prior to 1993, offered another example of what happens when state aid to schools does not receive statewide political support. In part due to the recession and the decline of the auto industry, Michigan experienced the steepest decline in state share in school costs over the years studied among the parity-stable group. The state’s limited role is seen in two different examples; one relates to Detroit and the other to a small rural district. Detroit, the state’s major city, is clearly isolated from the governing institutions at the state level. The state-city relations had deteriorated during the long tenure of Mayor Coleman Young. In addition, the demographics have worked against the city. While Detroit maintained 22 percent of the house seats in the 1960s, it controlled fewer than 14 percent of the seats in the 1980s. The suburban communities, on the contrary, now hold 30 percent of the house seats. Just at the time when Detroit’s influence was in decline, the state legislature had become increasingly reluctant to provide additional aid to the city schools. In 1973, for example, the state legislature raised the minimum level of required local levy, which was substantially higher than what Detroit was taxing at the time (Mirel 1993). To avoid risking a significant loss in state aid, Detroit had to impose a higher millage on its already shrinking property-tax base. Although Detroit presently receives more than half of its revenues from the state, there is very limited political support for a more activist state in general. The latter point is illuminated by the failure of the state to intervene in the Kalkaska district in the rural northwestern lower-peninsula area (*New York Times* March 21, 1993). The district’s levy proposal has been rejected three times by the community, whose residents are mainly retirees with no school-age children. In response to the district’s appeal for \$1.5 million in state aid to keep the school open for ten more weeks, the state legislature cited that the state

codes could not compel the district to stay open (unlike California laws). In the absence of a state subsidy, the district was forced to close the schools ten weeks early. In short, even in a fiscal crisis like the one in Kalkaska, the state leadership, restrained by a broader taxpaying constituency, decided not to step in and assume greater responsibility in educational funding.

In late 1993 Michigan politics took a dramatic turn, when the Republican governor and the legislature produced a compromise that would replace two-thirds of the local property tax revenues with state taxes. Among the facilitating factors for the bipartisan reform was the fact that Michigan’s property tax burden was 30 percent higher than the national average (ACIR 1992). Michigan voters subsequently approved a measure that raises the state sales tax from 4 percent to 6 percent, increases the tax on cigarettes by three times, and creates other users fees (Federal Reserve Bank of Chicago 1994). The adopted measure also slightly reduces the state’s personal income tax from 4.6 percent to 4.4 percent. Clearly, the plan reduces the property tax burden for homeowners, and to a limited extent, business property owners as well. It remains to be seen whether the shift to a greater state role would actually reduce the disparity between the have-nots (such as Detroit and rural districts) and the haves (such as suburban communities outside of Detroit).

A key policy question is whether the state’s leveling-up strategy has the effect of narrowing the gap in fiscal capacity among districts. Using the latest available state-by-state information, Wong (1999) analyzed the extent to which disparity persisted between the fifth and ninety-fifth percentiles of the districts in each state. There are, to be sure, interstate variations. Seven states had a fairly wide disparity gap that exceeded 0.40 (or 40 percent of the per-pupil spending). These included Alaska, Illinois, New Hampshire, Montana, Vermont, Kansas, and Arizona. In contrast, nine states had a modest disparity gap of less than 20 percent between the haves and the have-nots. These were California, Washington, Alabama, Delaware, Iowa, North Carolina, West Virginia, Florida, and Nevada. The exceptions are Hawaii and Washington D.C., both of which are basically unitary systems without subdivisions.

Kenneth K. Wong

CITY AND STATE TAKEOVER OF DISTRICTS AND SCHOOLS

City and state government takeover as a school reform model focuses on district-level capacity to reduce institutional fragmentation and raise academic accountability. This kind of systemwide restructuring is based on several organizational principles that:

- recognize that the existing political structures are not easily alterable;
- empower the district and state level administration to intervene in failing schools;
- enable city hall to manage conflicting interests and reduce fragmentary rules; and
- integrate political accountability and educational performance standards at the systemwide level (Wong 1992, 1999).

Integrated governance as a reform approach enables the mayor or state officials to rely on systemwide standards to hold schools and students accountable for their performance. To improve outcome-based accountability, integrated governance often imposes sanctions on and provides support to low-performing schools (Wong 1999). Failing students are no longer promoted to a higher grade but are required to attend summer instructional programs.

Indeed, integrated governance has gained national attention. The hallmark of the Bush administration education plan is to increase accountability for student performance through a system in which “states, districts and schools that improve achievement will be rewarded [and] failure will be sanctioned” (*No Child Left Behind*). In light of the growing prominence of the integrated governance approach, school reform is likely to be shaped by the ways in which the current, largely insulated, school bureaucracy moves toward accountability and coordination. This entry is concerned with the takeover aspects of the integrated governance school reform model.

EMERGENCE OF SCHOOL DISTRICT TAKEOVER

A growing number of states and city governments have developed policies to deal with failing school districts or failing schools (Cibulka and Derlin 1998; O’Day

1997). Implementation of takeover reform has increased over the past decade. The incidences of takeovers occurred for various reasons. As of the early 2000s, the peak of takeovers came during the three-year period from 1995 to 1997. Thirty-eight percent (15 of 40) of takeovers occurred during these three years, including the highly publicized takeovers in Chicago (1995), Cleveland (1997), and Baltimore (1997).

In Maryland, for instance, schools can be reconstituted if they have been falling below a certain standard of performance and have been declining in performance over several years. Schools can develop a transition plan to avoid reconstitution by the state. State monitoring and some initial additional funds are provided until the school has improved sufficiently to warrant being taken off the list (none have been thus far). If a school fails to improve, the state reserves the right to reconstitute the school, including instituting management by an alternative provider (Cibulka 1999; Michaels and Ferrara 1999).

Takeovers have also grown broader in scope over time. While most states have had provisions for state takeover of local school districts, states rarely invoked them, except in cases of clear financial mismanagement or illegal activity (Cibulka 1999). Before the 1995–97 takeover peak, 60 percent of takeovers were for purely financial and/or management reasons, while only 27 percent were comprehensive takeovers that included academics. In the three years after 1997, however, the percentage of comprehensive takeovers rose to 67 percent and the percentage of takeovers solely for financial and/or management purposes dropped to 22 percent. The general trend, following on the heels of the big-city takeovers in 1995–97, is for city/state takeovers to involve more than just financial management.

Some of the more recent state takeover laws focus more on breaches of academic accountability. Twenty-four states allow state takeover of local school districts, permitting state officials to exert authority over a district in the case of “academic bankruptcy,” or woefully low-performing schools, but only eleven states have exercised the law. Even when intervening, states often refrain from entirely dismantling the local school district administration, such as the school board and the superintendent. A majority of state takeover laws allow state administrators to influence decisions behind the scenes in a more limited fashion in academically troubled districts, first giving

schools or districts an opportunity to improve before more drastic measures are taken (Cibulka 1999).

When takeovers do occur, the duration of the takeover is linked to its scope. The overwhelming majority (ten of fourteen) of completed takeovers (where local control has been re-established) are takeovers that do not involve academic reform. State policymakers who initiated takeovers were keenly aware of the challenge, "Improving student achievement takes time" (Lewis 1997). This is seen in the fact that only four of the twenty-three takeovers involving academics have been completed. The rest remain in progress, and may remain in progress for a long time. The comprehensive takeovers, which include financial, managerial, and academic components, last the longest. Only one of the comprehensive takeovers has been completed, and it is the oft-cited state takeover of Logan County, West Virginia. Todd Ziebarth (2000), Kevin Bushweller (1998), and Richard Seder (2000) all quote local officials who "credit the success of the takeover to working collaboratively with the local school board during the takeover" (Seder 2000). The remaining comprehensive takeovers are still in effect, and seven of the fourteen have been in place for more than five years.

What are the effects of takeover reforms? The following discussion examines three potential effects that takeovers are designed to produce: (1) higher student performance, especially in the lowest performing schools; (2) more effective financial and administrative management; and (3) improved public perception of the school district through greater accountability.

Higher Student Performance

Aggregated to the district level, it is difficult to make generalizations about whether takeover reform is working as a means to improve student achievement. On one hand, there are many examples of improvement in student performance after both city and state takeovers. On the other hand, however, there are also many counter-examples of recent decline. In Cleveland, for example, from academic school year 1998/99 to 1999/00 there were improvements in reading proficiency in grades 1, 3, and 5, but at the same time declines in grades 2, 4, 7, 8, and 10. Cleveland also saw gains in math in grades 1, 3, 5,

6, 7, and 9 during the same period in which grade 11 declined.

While comparisons across districts are not possible given the use of different achievement tests, it is enough to note that there are not consistent year-to-year trends across districts. Although districts may gain significantly in one year's time, these gains are not necessarily sustained. In short, at the district level there is no clear story on achievement and either mayoral or state takeover. We next turn to school-level analysis.

Examinations of school-level analysis in Boston, Chicago, Lawrence, and Compton lead to four broad observations regarding the relationship between academic performance and school district takeover (Wong and Shen 2003). First, mayoral takeover in Chicago and Boston seems an important factor in raising student achievement at the elementary grades. Second, gains in achievement in Chicago and Boston are especially large for the lowest performing schools, suggesting that mayoral takeovers involve a special focus on these failing schools. Third, mayoral takeover in Chicago and Boston seems less effective for the upper grades, where the cumulative effects of many years of poor schooling are not easily reversible. Fourth, when state takeovers produce administrative and political turmoil, student achievement suffers. After a period of adjustment, however, state takeovers may also be able to produce positive achievement gains.

Gains in Elementary Grades In Boston and Chicago, elementary schools were improving their standardized test scores in the late 1990s. In Boston, the percentage of students failing the Massachusetts Comprehensive Assessment System (MCAS) fell in all three grades (fourth, eighth, and tenth) for both English and Math. In Chicago, the percentage of students at or above national norms on the Iowa Tests of Basic Skills (ITBS) and the Tests of Achievement and Proficiency (TAP) increased in all but one grade level from 1994 to 1997, and across the board from 1997 to 1999. In 1999, this meant that the percent of students at national norms was 9 percent higher in math and 6.6 percent higher in reading than it was in 1997.

Gains in the Lowest Performing Schools In Boston and Chicago, the lowest performing elementary schools were making strong improvements as well. Compared

to all schools in Boston, the lowest performing schools reduced the number of failing fourth grade students by almost 10 percent more in English and almost 5 percent in Math. This comparison should not be interpreted as a negative comment about the rest of Boston's public schools (outside of the bottom 20 percent). It is likely that the reason the other 80 percent of schools have a smaller change in the percent failing is because they had fewer failing students to begin with. This comparison is used to isolate the lowest performing schools to assess their progress. It is not a given that the bottom 20 percent of schools will improve, and that is why the comparison is necessary. It is conceivable, for instance, that the bottom 20 percent of schools could have seen little change while other schools in the district contributed to a large change in the district average. In Chicago, the bottom 20 percent of elementary schools made greater improvements in all grades in both time intervals. Looking, for example, at fourth grade performance, Chicago's bottom 20 percent of schools bettered the average for all schools by 5 percent in Reading and by almost 7 percent in Math. School-level analysis strongly suggests that in these two mayoral takeover cities, the lowest performing elementary schools were making gains on their standardized test scores.

Mixed Results for Upper Grades Achievement levels in the upper grades in both Boston and Chicago raise the possibility that in the upper grades, student achievement has not improved as much and the bottom 20 percent of schools have not performed better than the district average. In Boston, the percent of students (across all schools) failing the MCAS English section fell 7.99 percent for fourth graders, 5.36 percent for eighth graders, and 1.61 percent for tenth graders. In Math, the percent failing fell 12.87 percent for fourth graders, 9.08 percent for eighth graders, and 2.06 percent for tenth graders. This trend in student performance suggests that the greatest gains in student achievement are realized in the lower grades. A similar trend occurred in the percentage of students who scored at the proficiency level. In grade 10 in Boston, in fact, the percent of students proficient in English fell .61 percent from 1997/98 to 1998/99. In addition, the bottom 20 percent of schools no longer performed better than the average for all schools. Compared to the .61 percent

fall in proficiency in grade 10 English, for example, in the bottom 20 percent of Boston's high schools, tenth grade saw a 1.5 percent drop in proficiency. In Math, the average for all schools went up almost 2 percent, but the lowest performing schools made no improvement from the previous year. This is an example of the district average being driven by the higher performing schools, while the bottom 20 percent remained stagnant.

In Chicago, the same phenomenon arose in grade 9. From 1993/94 to 1996/97, the average for all schools went up 10.3 percent in math and 2.9 percent in English; the average for the bottom 20 percent of schools only rose 5.8 percent in math and 1.4 percent in English. In grade 11 in Chicago, the bottom 20 percent of schools performed about the same as the average for all schools, performing slightly worse in math and better in reading. From 1996/97 to 1998/99, the lowest performing schools did a little better in comparison with the overall average. In grade 9, their rate of improvement was almost identical to the overall average, and in grade 11, they performed 1.7 percent better in math and .9 percent better in English. The data in Boston and Chicago suggests that in the upper grades, the improvement in student achievement lessens overall and the lowest performing schools no longer improve more than the average for all schools.

State Takeover May Improve Schools Following the Initial Phase During the initial phase of state takeover, a certain degree of leadership instability tends to occur. While the state claims legitimate intervention in failing districts, local school boards and superintendents of the takeover districts can be distrustful of the state's intention. When superintendent turnovers and state-local squabbles occur, teaching and learning are adversely affected. During the initial phase of state-local conflict, student achievement declines. Once turmoil subsides, student achievement may gradually improve.

In Compton, where state takeover has been in place since 1993, students are improving their academic performance and the lowest performing schools are in most cases improving as well. From 1997/98 to 1999/00, all grade levels in the Compton Unified School District saw improvements on the Stanford 9 test. Similar to Boston and Chicago, the largest gains were in grades 2 and 3, where reading

scores went up 12.8 percent and 6.7 percent respectively. Math scores also rose. The bottom 20 percent of schools in Compton improved, and sometimes more than the average for all Compton schools. The gains seen in Compton suggest that state intervention may be more effective after it has been established for a prolonged period of time. This would be consistent with the idea that after an adjustment phase, state takeover can establish effective strategies for improving achievement. Indeed, in several districts in Alabama, Kentucky, and West Virginia, state takeovers were phased out following school improvement. In these districts, local school boards have successfully regained their independence.

More Effective Financial and Administrative Management

Analysis of the distribution of administrative and support personnel also suggests a new trend after mayoral takeover: the infusion of nonteacher administrators into management. This change was most evident in Chicago, where the percent of administrators rose significantly from 1995/96 to 1996/97. This was matched by a drop in the percent of support staff. These changes were greater than 30 percent and suggest that a more diversified management team is being put in place to run the school district (e.g. Chicago recruited a former city budget director, Paul Vallas, to act as CEO during the first six years of its takeover reform.) In Chicago, noneducators who were recruited from the private and nonprofit sector filled many top management positions. In Washington D.C. under Superintendent Paul Vance's administration, a majority of his executive cabinet were drawn from diverse professional fields, including the navy, private management, and public policy. Given these case study findings, it will be interesting to see if other takeover districts move toward a more diversified management.

Increased Accountability In Order To Enhance Public Confidence

Looking at the types of tests that districts give to their students, two trends are evident. First, many takeover districts are in states that administer content-standards assessments. Although states vary in the number of grades they test, it is clear that all of

the states in which takeovers have occurred are concerned with measuring student performance against state-defined standards. Further, in the mayoral takeover districts, there is also a strong emphasis placed on additional tests administered by the local authorities. For several years following the mayoral takeover, Chicago created and implemented its own Chicago Academic Standards Examination (CASE) in order to better test its high school students. Chicago also uses the Iowa Test of Basic Skills (ITBS) to further monitor its progress. In Detroit, the Metropolitan Achievement Test is used in addition to the Michigan Educational Assessment Program (MEAP). Baltimore employs the Comprehensive Test of Basic Skills (CTBS) and Boston uses the Stanford 9 (SAT-9).

The use of these additional measures of student assessment in the mayoral takeover cities suggests that state standards are not the only benchmark districts are concerned about meeting. Because they use more than one set of standardized tests, the mayoral takeover districts test their students more than state takeover districts do. On the average, mayoral takeover districts administer an average of 19.29 tests, while state takeover districts administer 16.67 per year. (Using testing calendars made available by each school district, we calculated the total number of standardized tests administered per year in each district for all grades. For example, in Chicago during the academic year there are a total of twenty-two tests given across all grades. In grades 3–5 and 7–8 students take two tests per year. In grade 6 they take one test per year. In grades 9–11 they take three tests and in grade 12 they take two tests per year. We made similar calculations for each of the takeover districts.) In the state takeover districts, the smaller number of standardized tests is an indication that for state takeovers, state-administered tests are most important for district evaluation.

POLICY IMPLICATIONS

City and state takeovers suggest several policy implications. First, there are significant differences between mayoral takeovers and state takeovers. Mayoral takeovers in Chicago and Boston appear to be more effective in terms of academic improvement. Mayoral takeovers may make a significant impact

on the lowest performing schools. Second, takeovers may also produce more efficient financial and administrative management, and in the case of mayoral takeovers lead to a broadening of management expertise. Third, both city and state takeovers bring with them a heavy emphasis on academic accountability, and mayoral takeovers are more likely to utilize additional tests beyond state mandated exams.

While it is still too early to know where takeovers will lead (whether to sustained improvement or falling back), the components for success include: clear and attainable goals, working together with the existing administration for a smooth transition, and making the takeover heads (e.g., mayors) accountable as well as the teachers, students, and so on. When this happens, there is some evidence that supports mayoral takeovers as a reform that can improve failing school districts. These accomplishments, however, can be tempered where there is political or administrative turmoil.

From a research perspective, the emergence of school district takeover within the integrated governance framework calls for more systematic studies that link district level reform to the school and classroom. What arrangement of integrated governance (i.e. mayoral, state, or some combination) takeover is most effective in improving learning opportunities in the most disadvantaged, inner city schools? Will the new vision of accountability improve teaching practices? Can the mayor sustain commitment to education in a system of competing constituencies? As school district takeover becomes more frequent, these are the sorts of questions that policy analysts must continue to address.

Kenneth K. Wong

SCHOOL CHOICE AS A REFORM STRATEGY

Dissatisfied with low performance in public schools, an increasing number of states are focusing on market-like competition as the driving force to raise student performance (Hirschman 1971). Proponents of school choice argue that parental choice will create the most efficient way of raising

school quality. If a low-performing school does not respond to the market-like competition, declining enrollment will ultimately close down the school. Skeptics of school choice are concerned about self-selection among those who are in the most advantageous position to use information to choose schools. Those who are left behind, according to choice skeptics, will receive lower quality schooling services.

While the debate on choice continues, policy reformers have broadened parental access to various types of school choice programs. These include public school choice (such as charter schools, magnet programs, and public schools under private management), state-funded vouchers, and privately funded vouchers. In reviewing the range of choice-based initiatives, Jay Greene (2002) developed an Education Freedom Index for each of the fifty states. This index uses four components (weighted equally) to determine the state-initiated school choice climate: charter schools, subsidized private schools, home schooling, and public school choice. According to Greene, Arizona provides the highest degree of school choice to families, while Hawaii maintains the least choice. During 2000 and 2001, Florida showed the greatest gain toward school choice, while Utah seemed to regress. Further, there are state variations across the four components. While public school choice (such as citywide magnet programs) was widely implemented, subsidized private school choice from either governmental or nongovernmental sources was absent in eleven states. Thirteen states did not have legislation on charter schools, while only two states did not allow for home schooling in 2001. Nationwide, almost 900,000 school-age children are home schooled.

CHARTER SCHOOLS

The charter school reform represents the most extensive state effort to promote choice. With thirty-seven states and the District of Columbia operating a total of over two thousand charter schools in 2001/02, charter school reform takes on a national character as an alternative to failing public schools. Across the nation, approximately two-thirds of the charter schools have a waiting list, suggesting substantial

parental demands for this type of school choice initiative. As new charter schools are established to meet rising parental demands, a key issue is the quality of the schooling opportunities provided to students in various settings. Charter schools of the 1990s are designed to circumscribe institutional constraints such as union power. By relaxing school admissions policy on student selection, public charter schools are designed to keep parents satisfied with the public schools instead of opting for nonpublic schools (Raywid 1985; Wong 1992).

Although charter schools are labeled as public schools, they are distinctive in several major aspects. The school's charter or contract explicitly states the conditions and expectations for outcome-based performance that are consistent with the state framework (Bierlein 1997; Hill 1997). The authorizing agency can be the local school board or other legal entities such as universities. Once established, charter schools enjoy substantial autonomy in setting teachers' salaries and work conditions, although they are governed by state regulations regarding safety, health, dismissal, and civil rights. School funding follows students to the charter schools, which are operated on a multiyear renewable contract. At least one district in California has converted to a system of charter schools. Enrollment in charter schools increased to about 2.5 percent of the nation's public school student population in 1999/00. In Arizona, California, and Michigan, charter enrollment figures are much higher.

Do charter schools create a competitive environment that causes regular public schools to make greater efforts to raise their performance? The rationale of competition has been widely cited, but there is a need to determine whether evidence exists to support such a claim. Research analysts and policy reformers, not surprisingly, are split on this issue (see Wong and Shen 2001).

Competitive effects of charter schools are constrained by legislative compromise. Based on interviews and policy/legal analysis in four states, Bryan Hassel (1999) found that legislative compromise has played a significant role in reducing the competitive impact of charter schools. Laws that cap the number of charter schools, cushion the financial blow to traditional district schools, or reduce the autonomy of charter schools all contribute to reducing the impact a charter school can make. In a study of five urban

districts, Teske et al. (2000) attributed the modest effects of competition to several factors. The effects of charter school competition are lessened by financial cushioning and by a lack of school-level penalties for losing students to charter schools. Growing student populations may also reduce the competitive effects; even though traditional public schools are losing relative market share, the absolute number of their students remains constant. In districts where charter schools did have an impact, piecemeal rather than systemwide changes were made, mostly concerned with expanding the school day by offering new add-on programs. A study of Milwaukee and Cleveland by Frederick Hess (2003) found that public school districts were slowed in institutional reform but seemed ready to improve their marketing strategies in a competitive environment.

Charter schools also vary in the effects on income and social stratification, a concern widely shared by skeptics of school choice initiatives. Wong and Shen (2001), for example, found that California and Michigan have quite different charter school landscapes. Although each state has relatively strong charter legislation and a larger number of charter schools, the two states differ in terms of innovation and stratification effects. In California, for example, there is a clustering of high-achieving students by race. In Michigan, there seems to be less stratification. Other differences between the two states include the extensive involvement of higher education institutions in Michigan and the large number of home school-focused charter schools in California. These and other differences may account for the varying degree of stratification in the two states.

OUTSOURCING LOW-PERFORMING SCHOOLS

Nonprofit and for-profit organizations are expanding their presence in the public educational sector to compete for government contracts to run schools that are subject to state and district standards on accountability. Contracted schools are not necessarily charter schools. They enjoy school-site autonomy over personnel hiring, student recruitment, and staff compensation. Contracted schools, although they exercise a certain degree of management and programmatic discretion, are often governed by virtually all of the district and state guidelines, includ-

ing collective bargaining agreements between the district and the unions and academic standards and assessments that are applicable across the school district. However, the key feature is that the district or the state (i.e. the contract agency) is willing to grant management autonomy to the contracted service providers, which in turn agree to meet certain measurable outcomes within a given time frame.

In this governance arrangement, the contracted service providers are expected to “do the job better, or cheaper, with no fewer positive side effects and no more negative ones than the public alternative” (Donahue 1989, 221; also see Walberg and Bast 2001). In education, previous small-scale attempts to contract out low performing schools have produced mixed results (Orr 1999). While service providers seem to be able to raise student performance, they are less ready to address broader community concerns of school quality (Donahue 1989, 219). For example, school context and educators’ skepticism may pose a major challenge to any generic approach that is adopted by the Education Management Organizations (EMOs) (Hernandez and Mahoney 2002).

According to Arizona State University’s Education Policy Research Unit, there are over thirty major for-profit companies that manage almost four hundred traditionally public and public charter schools in dozens of states. Many of these for-profit companies that engage in a wide range of activities in elementary and secondary education have stocks that are publicly traded (Walsh 2002). Among these are Edison Schools Inc. (which is no longer publicly traded), Renaissance Learning, Inc., and Sylvan Learning Systems, Inc. In addition, many universities and community-based organizations are contracted to manage low-performing schools. For our analytical purpose, the role of the EMOs as contracted service providers in public, noncharter schools needs to be considered further.

In this regard, the most extensive effort to contract out persistently low-performing schools to alternative service providers is the Philadelphia school district. Edison Project was commissioned by former Governor Tom Ridge to conduct an assessment of the academic and financial position of the Philadelphia school district in the fall of 2001. The report’s findings provided the basis for the legislation that granted the governor appointive power of the ma-

jority of the school board. Edison project was subsequently hired as the “lead district advisor” to manage the central administration during March and July of 2002. An initial plan of granting Edison management over a substantial number of schools was terminated when the school board hired Paul Vallas, the former CEO in Chicago, to become the district’s CEO in July 2002. Instead, the Vallas administration selected seven outside managers (or EMOs) to manage forty-five low performing schools beginning in August 2002. EMOs, which included Edison Project (twenty schools), University of Pennsylvania, and Temple University, among others, were given extra financial incentives that ranged from \$450 to \$881 per student. In April 2003, the district terminated the contract with one of the EMOs, Chancellor Beacon Academies, for lack of progress. Thus, it remains to be seen if the EMOs in the Philadelphia experiment will raise student performance in the longer run (Paige 2004).

STATE-FUNDED VOUCHERS

Another prominent marketlike reform is the state-funded voucher experiments, which are implemented in Florida, Milwaukee, and Cleveland. These experiments signal that an unusual kind of political alliance has emerged to address the growing concerns with failing public schools in the inner city. This new alliance consists of two core segments of the Republican and Democratic Parties. Frustrated with the low quality of schooling opportunities for their constituencies, lawmakers and religious and community leaders in African American neighborhoods (a traditional core of the Democratic Party) have parted company with the teachers’ union (another Democratic core) and supported a more radical solution to the crisis in urban education. In the Republican Party, some governors and lawmakers have begun to engage in an effort to look for alternative strategies to improve failing schools in the urban neighborhoods. In Milwaukee, Polly Williams, a black state lawmaker, and Howard Fuller, a black activist and former superintendent, became the most outspoken supporters of the state-funded voucher program, which began in 1990. In Cleveland, Fannie Lewis, a Democratic member of the city council, spearheaded the 1994 passage of the choice program in the Ohio legislature. Joining the Democratic core were Republican

governors and their business allies who saw choice as a mechanism not only to improve school performance and market efficiency but also to weaken the influence of the teachers' union. In both Milwaukee and Cleveland, this unique alliance was gradually broadened to include the Catholic Church and a wide range of business interest groups. Seeing a broadening of support, key proponents of choice have attempted to increase the demand and supply of choice programs. For example, Milwaukee's Mayor John Norquist favored raising the income ceiling on eligibility. Pro-choice advocacy groups, such as the Heartland Institute in Chicago, continue to play an active role in organizing lobbying efforts in state capitals.

The Cleveland voucher program has gained national attention. The program started in the fall of 1996 and was immediately challenged by the court for violating the "establishment clause," as students were allowed to choose religious schools. The program was restricted to lower elementary grades during the initial phase. In its first year, about two-thirds of the nearly two thousand participants enrolled in kindergarten or first grade, and about 25 percent had attended private schools in previous years. The Cleveland program was challenged on the ground that over 90 percent of its students enroll in sectarian schools. In December 2000, the federal appeals court in Cincinnati ruled that the enrollment pattern had the "impermissible effect of promoting sectarian schools." However, in June 2002, the U.S. Supreme Court by a narrow margin of five to four found that the Cleveland voucher program did not violate the First Amendment's Establishment Clause that separates the affairs of religious institutions and the government. The New York Times headlines read, "Majority says Cleveland Program offers 'True Private Choice'" (Greenhouse 2002).

The Supreme Court's 2002 *Zelman v. Simmons-Harris* decision is likely to encourage some states to redefine the delivery of public education. First, the decision is likely to spread the voucher experiment to a growing number of states, just like the charter school movement over the last decade. Second, with state funding support, parental demand for school choice will grow. In response, diverse suppliers of schooling services will emerge. These include faith-based organizations, discontented parents and teachers, as well as nonprofit and community-based organizations. If the voucher movement grows as fast

as the charter school reform, the supply of public schooling in the next ten years will be significantly different than the existing service delivery system. However, the voucher movement, like the charter school reform, may also necessitate a more active state monitoring and support role (Fiske and Ladd 2000). As parents exercise school selection, the information needed for accountability and school performance will not subside.

PRIVATELY-FUNDED VOUCHERS

While the public has focused primarily on state-funded vouchers, privately funded vouchers have been implemented since the early 1990s. The first program was started by the CEO of the Golden Rule Insurance Company in Indianapolis that provided scholarship to 746 inner city children for schooling choices. By 1998/99, over 13,000 students used their private scholarship to attend schools of their choice in over thirty cities. These programs were shaped by the first Golden Rule initiative—private funds to provide scholarship to low income children on a first-come first-serve basis for whatever private or religious schools they select. In a review of the privately funded vouchers across the nation as of the late 1990s, T. Moe highlights the policy significance of this initiative. He points out, "But by comparison to the public programs, private voucher programs give us a much simpler, more direct indication of how choice and markets actually operate when the most burdensome trappings of bureaucracy and political control are removed" (2001b, 100).

The design of privately funded vouchers has changed from first-come first-serve to a lottery in recent years. This shift resulted from negotiation between the corporate funders of the programs and the Harvard-led research team that argued for a more scientific design in gathering data on program effects on student achievement. The study team was directed by Paul Peterson, whose early concerns about self-selection bias led him to compare voucher participants with those who applied but did not receive the voucher in the state-funded pilot programs in Milwaukee and Cleveland. It comes as no surprise that his argument for using scientifically based evaluation design has led to the use of random (lottery) selection of eligible applicants in the privately funded voucher programs.

In a study of several privately funded voucher programs for urban low-income children, Howell and Peterson found that African Americans benefited more from school choice than their peers. African American students who are program participants as a result of lottery in New York, Dayton, and Washington D.C., according to the authors, “gained, on average, roughly 3.9 [national percentile ranking] points after Year 1, 6.3 points after Year II, and 6.6 points after Year III” (2002, 146). These findings led them to offer a “differentiated theory of choice,” in that the program’s marginal benefits tend to be greater for those who encounter poor educational options (such as inner-city low income African American children). The benefits gap, as measured by statistically significant effect sizes, illuminates the consequences of shifting from public to private schools. While parental satisfaction was persistently strong in the voucher program, student departure from public schools showed “few adverse side effects” (p. 186).

A major part of this study lies in its application of the randomized field trials (RFTs). Although RFTs have been used in evaluation of intervention programs in health care, housing, and welfare assistance, they are rarely used in educational research. The Harvard research team collected baseline information (including student test performance) at the time of the application as well as follow-up information through the third program year. Lottery was used to randomly select voucher participants from the whole applicant pool. Those who were not selected became the control group for analytical purpose. The lottery fits the two essential criteria to aid in “an instrumental variable technique,” namely, that the lottery itself is a good predictor for students attending private schools and at the same time does not highly correlate with the outcomes (including student performance). Clearly, the RFTs offered a robust scientific base for the study’s internal validity.

Notwithstanding the potential of school vouchers to raise urban school performance, particularly among African American students, the proposed differentiated theory needs to take into consideration that vouchers by themselves may not be sufficient incentives to keep the participants in the private schools. While the initial parental demand seemed strong at the application stage, the attrition rates were fairly high during the first three program years (see

pp. 34–35). For example, in New York City, only 70 percent of those who received the voucher remained in the private schools toward the end of the third year. In Washington D.C., only 29 percent of the first-year cohort remained through the third year. Using these attrition rates for the three cities for the first cohort, I calculated that only about 54 percent of the students remained in private schools of their choice. What happened to the 46 percent who left would be an important research undertaking toward a more complete understanding of school choice. As Howell and Peterson briefly acknowledged (pp. 66–67), parental decisions not to use their vouchers were related to their inability to supplement their own income to pay for higher tuition, transportation cost, and the timing of getting the lottery results. In the Washington D.C. program, schools tended to select higher performing applicants in grades 6 to 8 (pp. 68–70). Peers, too, can dampen what may have been a positive experience when a student switched from public to private school. As Howell and Peterson found, vouchers had “only modest effects on peer friendships and racial integration” (p. 126). In other words, while the lottery is designed to ensure equal chances among applicants, individual schools enjoy autonomy over admissions and peers can exclude voucher participants from their social networks. At issue is the extent to which the fairness principle can be extended to the school sites, thereby bringing the supply side in closer alignment with the demand side.

Findings from the RFTs led Howell and Peterson to caution on direct causality between vouchers and achievement. They observed, “We are not able to explain the positive impacts of vouchers on African American test scores by any single factor . . . Education is too complex” (p. 187). Consequently, they questioned whether vouchers would be used effectively to fix failing schools given the difficulty of specifying causality between vouchers and test scores. They were equally concerned that vouchers that targeted only the low-income population would further isolate the disadvantaged from the rest of the community. Instead, they proposed a system wide strategy, distributing vouchers for all central city residents regardless of income, race, and ethnicity.

From the perspective of Howell and Peterson, vouchers for the entire city would be politically feasible without worsening income and racial stratification. This strategy, which takes into consideration

the interests of the city as a whole, is consistent with Peterson's argument in his book, *City Limits* (1981), where city governments are keen on implementing fiscal policy that enhances their competitive position but reducing their redistributive efforts. While vouchers that target low-income families would be seen as redistributive, citywide vouchers may have the potential of improving the overall schooling quality of education in the city, an example of human capital investment that would facilitate the city's long term growth. While conceptually appealing, citywide vouchers have yet to be carefully examined in terms of both intended and unintended consequences. Clearly, the use of scientifically based evaluation design will play a critical role in such a citywide experiment.

Howell and Peterson's policy recommendation clearly involves significant tradeoffs among societal and educational values. Kenneth Godwin and Frank Kemerer (2002) examine advantages and risks in school choice from a liberal democratic framework. Unlike Howell and Peterson, Godwin and Kemerer focused on both private and public school choice. During 1992 to 1996, the authors examined the privately funded Children's Educational Opportunity (CEO) program that offered scholarships to low income children in elementary grades in San Antonio. The CEO program was not a randomized experiment and did not exclude those families whose children were already enrolled in private schools. Instead, the 936 scholarships were allocated on a first-come first-serve basis. Further, Godwin and Kemerer studied the implementation of a district-funded accelerated, multilingual program that was based on academic performance of the sixth grader applicants. This popular citywide program rejected about 30 percent of the applicants.

Using survey data from participants in the two programs, the authors identified "choosers of private schools" (mainly the CEO program participants), "choosers of public schools" (mainly participants and other applicants who were rejected in the multilingual program), and "nonchoosers" (a random sample of public school students in the district who did not apply to any choice program). Unlike the Howell and Peterson study, Godwin and Kemerer did not examine those who applied but did not receive the privately funded CEO scholarship. Nor did they examine the CEO program participants who chose to

attend public schools outside of the neighborhood. Thus, the empirical base of their analysis did not fully utilize the available data from the two programs.

Several important findings emerged from Godwin and Kemerer's study of school choice in San Antonio. First, allocating scholarships using first-come first-serve tends to benefit students who are academically prepared and whose parents are more actively involved. To avoid self-selection, the authors suggested "a lottery system to choose among applicants, to exclude test scores from admissions criteria, and to have a quota of low-income students for each choice school" (p. 63). These findings are consistent with the argument made by Howell and Peterson. Second, in part due to self-selection, the schools that enroll choosers are generally supportive of teaching and learning. Third, Godwin and Kemerer did not find evidence to support a major concern of the school choice critics that selectivity would weaken students' support for democratic values and social tolerance. Finally, findings from the two programs showed that choosers with the most disadvantaged backgrounds tended to gain academically. In other words, the study confirmed "neither the nightmares of choice critics nor the dreams of choice proponents" (p. 64).

While Godwin and Kemerer did not take the methodological path that Howell and Peterson did in specifying the complex effects of school choice, they used their San Antonio study to illuminate the philosophical underpinnings of the school choice policy debate. Public contention over school choice, according to the authors, is ultimately tied to "the goals we want to pursue and that we assign a priority and a weight to each" (p. 65). Their synthesis of competing philosophical, constitutional, and economic perspectives provided the normative foundation on the aims of education in a liberal democracy (p. 234). The four major aims are: to provide students the skills to become economically independent, the political knowledge and skills to participate in democratic government, the moral reasoning to guide ethical behavior, and an equality of educational opportunity for all. These educational goals can be used to establish the standards in designing school choice policy, as suggested in their "proposal to expand school choice" (that begins on p. 235). More specifically, the state will expand its educational system to include nonpublic schools. It will identify 20 percent of its students as low income. Schools that admit students using state-funded scholarships/vouchers

are required to have at least 20 percent of their students from low-income families. Both private and public schools are exempt from the state's public sector collective bargaining law, except when a majority of the teachers in public schools decide otherwise. In incorporating these standards of choice and equity, the proposal takes a pragmatic approach. To some extent, Godwin and Kemerer's proposal resembles the school policy systems in the United Kingdom (see Wong 2001) and New Zealand (see Fiske and Ladd 2000) where choice is among several key policy levers to improve accountability and service quality. Unlike these systems, the Godwin and Kemerer proposal did not challenge the tradition of state control by calling for a national graduation examination system for the purpose of accountability (also see Moe 2001a).

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MULTIPLE STRATEGIES TO IMPROVE ACCOUNTABILITY

More than two decades ago, the National Commission on Excellence in Education issued its recommendations on reforming the nation's schools. In *A Nation at Risk* (1983), the Commission argues that the nation's interest lies in higher academic standards in our public schools and institutions of higher education. Although the commission was appointed by the Ronald Reagan administration, it did not advocate the agenda of the Reagan White House to dismantle the U.S. Department of Education and to enact tuition tax credit. Nor was the commission sympathetic with the Democratic-controlled Congress's recommendation for an increase in educational spending. Instead, the commission took a broader view on the nation's path toward "creating a learning society" (p. 13). More specifically, the commission recommended strengthening the core content areas, developing rigorous standards with high expectations for all students, improving the effective use of instructional time, requiring quality teachers in the classroom, and making comparisons of standardized tests of achievement.

Typical of the work of a broad-based commission,

A Nation at Risk was less specific in suggesting an accountability system to make certain that its recommendations would be implemented. In their analysis of the report, the Koret Task Force on K-12 Education at the Hoover Institution states, "[The Commission] seemed not to realize that the system lacked meaningful accountability and tangible incentives to improve, that it exhibited the characteristic flaws of a command-and-control enterprise" (Koret Task Force 2003, 11). Although the commission neglected to propose a system of accountability to ensure reform implementation, subsequent federal, state, and local actions have moved toward developing their systems of accountability that seem to facilitate the realization of the key programmatic recommendations of the 1983 commission. In short, more than two decades following the Commission's work, the nation is now ready to use multiple strategies to improve accountability in its public schools.

Building on the 1994 *Improving America's Schools Act*, the *No Child Left Behind Act of 2001* (NCLB) has its primary focus on the academic achievement of all students, particularly low-performing students in disadvantaged Title I schools. The 2001 act mandates states to establish and implement an accountability plan with well-defined standards for academic proficiency. It also requires states to hire highly qualified teachers who are trained in their instructional subject areas. Students are required to take annual tests in grades three through eight with results disaggregated by several subgroups, including racial and ethnic groups, special education students, and English language learners. Additionally, NCLB allows for supplemental services and school transfers for students in schools identified as low performing.

Even prior to the congressional enactment of the NCLB, many states had already established accountability plans and several states were ready to take more direct intervention in low-performing districts and schools. This state-led accountability movement is likely to grow rapidly as the federal NCLB requires a stronger state role in raising student performance. The law specifically requires states to administer annual assessments in reading and mathematics and to measure "adequate yearly progress" of all students and all schools, including special education populations and those who are English language learners. The federal law also sharpens its focus on narrowing the achievement gap among racial groups.

Governmental efforts toward strong accountability have received increasing public support, according to a parent survey conducted by Public Agenda. (Public Agenda 2000). The survey focused on parental reaction to standardized tests and stronger academic standards, gathering responses from parents nationwide. They also gathered sample information in several large cities, including Boston, Chicago, Cleveland, Los Angeles, and New York. Parent responses indicate that there is a strong relationship between accountability (in the form of content standards and standardized tests) and parental perception of the school district.

In the survey parents were asked: "Requiring schools to publicize their standardized test scores is a wakeup call and a good way to hold schools accountable. Do you agree or disagree?" Parents could choose from four options: strongly agree, somewhat agree, somewhat disagree, or strong disagree. In Boston, Chicago, and Cleveland, three cities where the mayor has taken control over the school district, parents overwhelmingly agreed that test scores are a good way to hold schools accountable. In Boston, 80 percent of parents agreed (with 57 percent strongly agreeing); in Chicago, 78 percent agreed (with 52 percent strongly agreeing); and in Cleve-

land, 76 percent agreed (with 56 percent strongly agreeing). All three cities had a greater percentage of parents strongly agreeing with the question than the national average of 49 percent. The Public Agenda survey thus suggests an overall climate supportive of accountability-based reform, which may include multiple sets of measures on student learning.

A policy convergence toward accountability notwithstanding, this chapter argues that there are competing approaches to improving school quality and raising student performance. From a broad societal perspective, socially oriented programs are needed to manage the tension between equity and efficiency. From a governance view, innovative practices are likely to continue to soften the jurisdictional boundary between an independent school district and the market, as well as between the schools and the mayor's office. From a classroom perspective, reforms must closely connect to the reality of teaching and learning. In other words, as accountability gains prominence in the nation's school-reform agenda, so will the debate on the most effective strategies to reach the goal of high student performance.

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SOCIOLOGY OF EDUCATION

Sociology of education is a specialized area of study within the discipline of sociology that addresses a range of social aspects of educational activities, processes, and institutions. The sociological study of education is generally viewed as originating with the work of Emile Durkheim, a major figure in sociology in general, who held the first university chair in pedagogy beginning in 1887. Among other things, Durkheim (1961) argued that education is the institution through which the moral values of the adult generation are transmitted to the young. Education serves both to maintain societal arrangements and to change them. Educational institutions constitute a major societal sector, and they have engendered careful examination by all those seeking to understand how societies organize socialization experiences for youth. Because educational systems are the result of intentional policies, the educational sector has also been a focus of inquiry for those who wish to use education as an instrument for social action of one kind or another. These dual purposes, understanding the social aspects of education and employing education to achieve social goals, motivate the work in the sociology of education.

The central role of education in all modern societies makes it an obvious target of inquiry for all those who would attempt to understand how societies function and develop. Over the years sociologists of education have engaged in a wide range of theoretical and empirical work concerned with understanding the role of education in societies as well as the inherently social nature of education organizations and processes. Such work has asked major questions about the role of educational institutions in societies, including how broader societal features influence the shape of an educational system, how education interacts with other major social institutions such as the family and the state, how the educational system operates to enhance or impede social

mobility, how the educational system contributes to economic prosperity, and how education can foster democracy in nations.

Sociologists of education and more policy-oriented scholars and practitioners have also employed sociological perspectives to determine ways in which the educational institutions and processes might be employed to achieve social goals. Such goals have included unifying a people in support of a nation and its values, creating a sense of order and acceptable behavior, preparing individuals for the modern workplace, shaping values, and changing behavior.

MULTIPLE LEVELS OF STUDY

Sociologists of education have engaged in study and analysis at multiple levels. Macro-level studies have examined the history, development, and nature of systems of educational activities and institutions in diverse societies. For example, Margaret Archer (1979) offers an historical and comparative analysis of how the major features of educational systems are shaped over time. John Meyer, David Tyack, Joane Nagel, and Audri Gordon (1979) consider the role of nation-building social movements in shaping the development of public education in the United States. Sociologists of education have also examined deliberate efforts to reshape educational systems through policies to promote school choice (Fuller, Elmore, and Orfield 1996), regulations pertaining to testing of students (McNeil 2000; Orfield and Kornhaber 2001), and longstanding strategies to improve urban education (Anyon 1997).

Mid-level analyses have focused on schools as the organizations where formal educational processes take place in modern societies. For instance, Willard Waller (1932/1965) examines the internal operation of schools, including the student culture and the efforts of teachers to maintain control.

James Coleman (1961) analyzes the lives of adolescents in secondary schools. Charles Bidwell (1965, 1987) offers a framework for the study of schools as formal organizations. John Meyer and Brian Rowan (1983) and Robert Herriott and William Firestone (1984) consider the internal connections between elements within schools. Various efforts to reform schools have been studied by sociologists, including school restructuring (Lee and Smith 1993) and comprehensive school reform (Legters et al. 2002).

Micro-level studies have been conducted in classrooms and other face-to-face educational settings. These studies have examined patterns of social interaction among the different actors in the educational process, including students, teachers, counselors, specialized educational personnel, administrators, and parents. For example, Talcott Parsons (1959) highlights the benefits of viewing the school class as a social system. Robert Dreeben (1968) discusses the ways in which the very structure of classrooms, schools, and relations between teachers and students creates fundamental socialization experiences to prepare students for modern society. Stephen Bossert (1979) notes how the structure of tasks in classrooms contributes to social order. Steven Plank (2000) examines the ways in which interactions among student peers are shaped by differences in status characteristics such as race and how those interactions can be further directed by the leadership styles of teachers and the structure of tasks and rewards. Susan Stodolsky (1988) considers the impact of the school curriculum on relations in the classroom. Maureen Hallinan and Aage Sorensen (1983) examine the factors leading to the formation of ability groups within classrooms. Sociologists have also developed and studied strategies for improving conditions for learning in classrooms. For instance, Elizabeth Cohen (1994) specifies the conditions that will make group work a more effective learning opportunity for students.

PLAN OF ENTRIES

The remaining entries in this chapter highlight work at each of the levels of analysis—macro, middle range, and micro—followed by a review of recent work by sociologists of education to contribute to efforts to reform and improve schools. A discussion of educa-

tional systems considers work at the broadest level of the relationship of education systems to the nations in which they operate. Education is treated as a sector comparable to other major sectors in modern societies such as religion, the economy, and the political system. Consideration of work in the middle range focuses on studies of schools as the major educational institution. Much of this work views schools as formal organizations and applies frameworks and concepts drawn from organizational analysis. Studies of the face-to-face interactions of teachers and students in classrooms demonstrate the use of micro-level analyses. These studies examine how social processes within classrooms enhance or impede learning opportunities for students. Finally, research in the sociology of education that bears directly and indirectly on efforts to change schools is considered as part of the school reform movement of the past twenty years. This work draws on sociological theories and concepts and attempts to offer concrete suggestions for school improvement.

Gary Natriello

SOCIOLOGY OF EDUCATIONAL SYSTEMS

Macro-level analyses of the social dimensions of educational processes and systems have constituted a great deal of the work of sociologists of education over the years. These analyses consider education as part of the broader social order and the place of the educational sector alongside other major social domains such as religion, culture, and politics. For the most part, the focus is on entire systems of education as opposed to particular schools, programs, educators, or classrooms.

Sociologists of education have examined educational systems in modern societies from a number of perspectives. Most of the approaches to the study of education at the societal or macro level can be related to either a functionalist or conflict orientation to society and its major institutions. Each of these orientations causes theorists and investigators to focus on different aspects of educational phenomena.

Functionalist explanations (Durkheim 1956, 1961;

Parsons 1951) focus on the social integration that is essential to the development and maintenance of nation states. Thus functionalist approaches tend to stress the need to move toward social consensus regarding fundamental values. From this perspective, education is viewed as a key institution in motivating and socializing individuals to behave in ways consistent with dominant societal values as part of a broader effort to maintain the societal order and cohesion. It is to education that the task of inculcating basic societal expectations falls. In the United States and other democracies, of course, participation in the democratic process is a key social value or common expectation that is conveyed (Giroux 1989; Gutmann 1987), but other values include order (Spady 1974), and sufficient skills acquisition to participate in the economy.

Human capital approaches (Becker 1993) to the role of education in society are a particular variant of the functionalist perspective that emphasizes the economic dimensions of education's contribution to the greater social good. Human capital theory argues that education is a worthy investment not only for an individual who will see his or her life prospects improved by acquiring more education but also for the society overall that will realize greater economic growth and development as a result of investments in the educational sector. The human capital approach is apparent in studies of the effects of education on the subsequent positions of individuals in the job market (Blau and Duncan 1967), as well as in broader studies that attempt to relate a society's investment in education to its subsequent economic development (Leach and Little 1999).

In contrast to the individualistic orientation of human capital approaches to education, social capital (Coleman 1988) and cultural capital (Bourdieu 1977) perspectives call attention to the social or group dimensions and consider how such resources advantage members of certain groups in societies. Social capital considers the role of relations in networks and communities and treats such relations as a resource that can aid or impede the schooling process. When students are imbedded in social networks with obligations and expectations, information channels, and social norms supportive of schooling, they are more likely to succeed in school. When students are not connected in this way to such resources they are less likely to succeed (Coleman 1988). Cultural capi-

tal focuses attention on the ways in which students utilize things such as knowledge of the arts, literature, and major intellectual trends along with appropriate language to gain advantage in school and later in adult life (Bourdieu 1977; Bourdieu and Passeron 1977).

In contrast to the functionalist perspective, the conflict perspective on the relationship between school and society argues that the expansion of systems of education within societies is not driven by the social or technical needs of the society to achieve unity and economic development but, rather, by the competition among wage groups that seeks to achieve relative advantage through education. Conflict theorists (Collins 1978; Bowles and Gintis 1976, 2002) maintain that the main activity of schools is to convey particular status cultures. Education is believed to reinforce status cultures by identifying insiders and posing barriers to outsiders.

The conflict perspective provides a particular analysis of the relationship between the economic system and the educational system. Samuel Bowles and Herbert Gintis (1976) have argued that there is a correspondence between the social relations of the workplace and the social relations within the educational sector. This correspondence suggests that the requirements of the modern economy for a division of labor and the segmenting of individuals into a worker class and a management class lead to similar arrangements within schools so that the necessary workers and managers emerge from the educational system to meet the needs of the economic system. Moreover, the organization of the educational system in ways that mirror the organization of the economic system means that individuals are socialized with the appropriate values and dispositions.

EDUCATION AND NATION BUILDING

Sociologists have considered the role of education in nation building, that is, in creating the modern participatory nation state. Theorists (Meyer, Ramirez, and Soysal 1992) have noted that in the modern world a primary function of schooling is to create citizens of nation states, that is, to convey to individual students that they are in fact citizens. Citizenship connotes a direct link between individuals and the state. Moreover, citizenship is universal within the state as all individuals come to be viewed as citi-

zens with certain rights and responsibilities. Modern states do not simply organize relations among people in ethnic groups, regions, or other collectives; they act to turn each individual into a citizen with standing independent of other characteristics.

With citizenship as the fundamental building block of the relation between individuals and the modern state, the state finds it necessary to convey a sense of common history to all of its citizens, that is, it must provide all citizens with the feeling that they are all really alike. This relationship is used to explain how it is that modern nation states all come to have formal systems of education.

The role of education in creating citizens and, indeed, modern nations, is illustrated by Bernard Bailyn's (1963) analysis of the development of the educational system in the United States. He begins his analysis by considering how the culture was transmitted in the colonial era prior to the development of the system of education. He identifies three agencies as involved in such cultural transmission: the family, the community, and church. The family provided elementary socialization as well as initial vocational training. The community provided additional instruction in the appropriate behavior in society and in the workplace with an emphasis on discipline. The community also introduced youth to the role of the local government and the state. The church offered additional exposure to the morals of the community and exposure to a system of thought and imagery that was the basis for the values of the culture. In addition, the church offered the most meaningful sanctions to reinforce behavioral norms.

Each of these socializing institutions was disrupted during the colonial period. The instructional functions of the family were rendered somewhat obsolete by the migration to the new world where children often had knowledge equal to or greater than parents. The impact of the community was diminished as small towns gave way to larger urban centers where children no longer had the sense that they were imbedded in a web of family and community relations that provided coherent and consistent guidance. The power of the church to instruct and influence was diminished as a result of growing religious pluralism.

In response to waning influences of families, communities, and the church, the American nation turned to the development of an educational system with a mission to bring about a homogeneous citizenry in

response to forces that promoted an increasingly heterogeneous society. Education became the centerpiece of efforts to self-consciously and deliberately forge a common conception of citizenship. Education was subsequently employed to include within the nation individuals from diverse groups (e.g., Native Americans, immigrants), although the nature and the extent of the inclusion were often such as to maintain the advantage of those already in power.

Creating citizens remains a fundamental purpose of education in the current era. Stable modern states achieve stability through expanding democratic participation and through reinforcing the mechanisms of state control. More contemporary investigations of the impact of formal education on the political development of nation states indicate that populations with higher levels of education are more likely to have higher levels of democratic participation (e.g., see Lipset 1959; Almond and Verba 1965) as well as a greater sense of national solidarity and purpose and a greater sense of the legitimacy of the leaders of the state and elites in general. Francisco Ramirez and Richard Rubinson (1979) found some evidence for the impact on democratic participation as well as some slight evidence that education does lead to higher levels of public bureaucracy and the control that accompanies it. The dual effects of increasing participation and increasing solidarity and state control are assumed to allow states to avoid instability as they develop.

Investigations of the impact of education on individual values and attitudes illustrate some of the ways that education enhances modern nation states. Studies of the impact of college on intellectual and aesthetic values and interests (e.g., Hyman and Wright 1979) show that higher levels of education are associated with higher levels of knowledge, a more intellectual outlook and greater receptivity to additional knowledge in the areas of current affairs, domestic and foreign policy, health, and popular culture. Studies have also shown that increased levels of education are associated with perceiving the importance and value of a good education (Knox, Lindsay, and Kolb 1992) and that attending college has a positive impact on things such as altruism, humanitarianism, and valuing civic activities (Astin 1977). Attending college does seem to have effects on political attitudes with education level positively related to being informed about public affairs and presidential elections (Hyman and

Wright 1979) and even to a general interest in politics, political activism, and holding public office (Knox, Lindsay, and Kolb 1992). Herbert Hyman and Charles Wright (1979) found that years of education were positively related to support for civil liberties, for freedom of information, due process of law, public expression, for freedom from legal constraints on intermarriage, for privacy, and for equality of opportunity for minority groups.

EDUCATION AND STRATIFICATION

In addition to creating a sense of common purpose and identity among individuals in modern nation states, education is also seen to reflect and contribute to social stratification within societies. That is, education plays a role in the differentiation of individuals and groups of individuals and the attaching of value to different social statuses.

Two general questions have been addressed regarding the role of education in social stratification in modern societies. First, what are the social background factors that determine how much education an individual is likely to get and the nature of that education? Second, what factors determine an individual's adult status, and, in particular, what part does education play in determining that status?

Sociologists have long examined educational attainment and its association with various social factors. The attainment process can be examined at the elementary level, the secondary level, and the post-secondary level. At the elementary level several social factors are related to whether or not an individual enters elementary school. Not surprisingly, the nation state makes a difference with virtually everyone entering school in some nations and a more variation in others, though over time elementary schooling has been extended more broadly. Social class differences have an impact on likelihood of entry where entry is not universal with children of more educated parents and those of parents with higher status occupations more likely to begin school. Where there are gender differences, males have an advantage over females. Geography plays a role in ways often related to social status with individuals in areas inhabited by higher status individuals (e.g., urban areas, more central areas, more central ethnic areas) more likely to enter school. Once in elementary school, ability has an impact on performance

with socioeconomic status having a smaller impact.

At the secondary level entrance is influenced by the nation state, and there are advantages for urban students and those from higher-status families. The effects of ethnicity and gender vary from country to country. Earlier school performance (e.g., grades) and measured intelligence make a difference in those countries where there is a formal system of examinations. In systems where there is variation in the secondary school program students from higher socioeconomic status backgrounds, those with better grades and higher measured intelligence tend to receive more valued programs (i.e., programs designed to lead to higher status adult occupations.) Performance in secondary school is related to prior school performance and measured intelligence with socioeconomic status and ethnicity having smaller effects. Secondary school completion varies by country with grades having an effect as well as socioeconomic status and ethnicity. The secondary school curriculum has an effect with students in college preparatory curricula more likely to complete secondary school.

Entrance to post-secondary education varies by country with some countries having much higher proportions of students entering college. Prior grades and measured intelligence have an impact on post-secondary entrance that is greater when there is a testing system in operation. Parents' educational levels have an effect along with parents' occupational status. College entrance is also influenced by the type of secondary school attended, the secondary school curriculum, and the aspirations of secondary school peers.

Examinations of the role of education in determining adult occupational status suggest that the process of status transmission from one generation to the next occurs primarily through education in modern societies. Individuals with greater educational attainment enjoy advantages in terms of adult occupational status. The number of years of schooling has a substantial effect on one's adult occupation. Of course, family social background has an effect on educational attainment so the effects of that background are largely transmitted through the educational system (Blau and Duncan 1967; Sewell, Hauser, and Featherman 1976).

The mechanism by which educational attainment affects adult occupational status has been interpreted from several perspectives (Collins 1971). A technical perspective suggests that individuals with greater edu-

cational attainment have more well-developed skills that are needed in certain occupations. Thus individuals with greater educational attainment are hired into higher status, more demanding positions in the adult occupational system. An alternative credentialing perspective argues that educational credentials are used to control entry into certain careers and career paths and that the positions in these careers are less reliant upon the skills of individuals and more rooted in the cultural characteristics that are associated with educational experiences and social background. From this perspective, educational credentials are more reasonably interpreted as signifiers of cultural characteristics than they are of technical skills. In this view employers are thought to be more concerned with dispositions associated with cultural background than with specific technical skills.

SUMMARIZING THE EFFECTS OF EDUCATION AS AN INSTITUTION

John Meyer (1977) has argued that the effects of education as an institution on societies can be understood from three major models or perspectives. He refers to these as socialization, allocation, and legitimation and suggests that all help explain the role of education in society. The traditional socialization perspective suggests that the educational system provides experiences to individuals that instill knowledge, skills, and attitudes. These individuals then have an expanded and more well developed set of personal qualities, which in turn allow them to demand more from and achieve more in the role structure of modern societies. As the competence of individuals in a society is enhanced, the overall society itself is enhanced and progress is achieved.

Allocation theories developed in response to a degree of social progress that is less than might be anticipated if the socialization model was all that was operating. The allocation perspective assumes that individuals in modern societies are allocated to adult roles in society on the basis of years and types of education independent of anything that they might have learned in schools. From this perspective, education operates more as a sorter or selector than as a socializer. From the allocation perspective, education is less concerned with instruction or socialization than it is with the set of institutional rules that classify and authoritatively allocate individuals to positions within a

society. Meyer (1977) specifies several additional effects or dimensions of the allocation perspective. At the school level educational allocation rules provide schools with social charters to define their students as graduates possessing distinctive rights and capacities in society. At the individual level, students tend to adopt personal and social qualities appropriate to the positions to which their schools are chartered to assign them. In addition, adults tend to adopt qualities appropriate to the roles and expectations associated with their adult statuses.

Legitimation theories deal not only with the movement of individuals into certain established positions within society, the phenomenon explained by allocation theories; they also deal with the impact of education on the arrangement of the positions themselves. That is, legitimation theories offer an explanation of the role of education in determining the social structure of societies. According to Meyer (1977) legitimation theories explain how modern systems of education operate to create certain rules that we all take for granted, rules governing the organization of personnel and knowledge in a society. According to the legitimation perspective, education provides a legitimating theory of knowledge by defining certain types of knowledge as authoritative or more valuable than other types. Education also provides a legitimating theory of personnel by defining categories of individuals who are assumed to possess certain bodies of knowledge and the accompanying authority. Both mass education and elite education operate in these ways. Mass education distributes general knowledge broadly and fosters the creation of citizenship or membership in the state. Elite education distributes specialized knowledge to limited categories of individuals and fosters the certification of expert authoritative competence.

Gary Natriello

SOCIOLOGY OF SCHOOLS

Investigations of the organization and operation of schools have dominated mid-level sociological studies in education. Since formal systems of schooling now exist around the world, the attention to the school as an important unit of analysis is not sur-

prising. This focus has allowed sociologists of education both to study these formal organizational contexts in which education now takes place within modern societies and to offer policy-relevant guidance to those charged with the development of educational systems. The diverse nature of studies of schools makes it challenging to classify work done at this level by sociologists. For the present purposes sociological work at the school level will be organized in three major categories concerning schools and the creation of members, the role of schools in the stratification process, and the insights of sociologists of education regarding the organizational structure of schools.

SCHOOLS AND THE CREATION OF MEMBERS

Schools have an initial task of taking in individual students and conveying to them a sense of membership in the school community, and, indeed, the larger society. Charles Bidwell (1965, 1970) and Robert Dreeben (1968) have observed that the student role in formal schooling is a recruitment role in which students are forced to attend simply because of their age. Dreeben explains how the structuring of the schooling experience prepares students to adopt the norms that are necessary to function effectively in modern societies. Schools engage in various processes and rituals to instill student commitment in the face of this process of forced affiliation. Anthony Bryk and Mary Driscoll (1988) observe that there are common activities within schools that serve to promote a sense of community and lead to enhanced commitment from students. These include rituals and ceremonies that involve students in celebrations, common academic experiences such as courses or tests, and special activities beyond the academic curriculum.

Rituals and ceremonies convey a sense of common membership in the school. For example, two such activities found in some schools are opening ceremonies to mark the beginning of a school term and initiation ceremonies or rites of passage to mark the beginning of membership in the school community for individual students. The opening ceremonies may, for example, serve to reiterate the school's mission and the need for all to participate in the pursuit of that mission (Kapferer 1981). Initiation ceremonies may involve the systematic humiliation of

new members to separate them from their former statuses and leave them ready to accept new identities as members of the school. Such common experiences may also increase solidarity among new members (Weinberg 1967).

Other ceremonies may occur throughout the school year. Nancy Lesko (1988) describes the homecoming ceremony at a Catholic high school as a series of events that promoted the total involvement of students, and Jacquetta Burnett (1969) describes the homecoming as a systemwide rite of intensification that provided an opportunity for equal participation and membership in the school. Culmination ceremonies such as graduation and associated events also enhance the commitment of students to their schools. In addition to major ceremonies, there are a variety of other elements such as school mascots, school rings, school songs, and school uniforms that reinforce a sense of belonging and membership among students. Velma LaPoint, Lillian Holloman, and Sylvan Alleyne (1993) observe that school uniforms reinforce a sense of "oneness" among students and operate to identify the members of the school.

A common core of academic experiences may also play an important part in promoting student membership and commitment. Bryk and Driscoll (1988) note that a curriculum common to all students has symbolic value in that it provides students with common experiences and binds them to their peers as well as to those coming before them and those following them in the school. Anthony Bryk, Valerie Lee, and Peter Holland (1993) claim that the common core of academic experiences found in Catholic high schools serves to bind students together. Becky Smerdon (2002) finds that students in the academic track and those taking more math and English courses experienced greater feelings of membership than other students.

The development of student membership also depends on patterns of communication, interaction, and cooperation. Gary Wehlage et al. (1989) identify four aspects of interaction in schools that contribute to memberships: (1) efforts to create positive relations between adults and students; (2) concern for individuals and their personal problems; (3) assistance in meeting school standards; and (4) help in identifying a student's future in the wider society. These factors lead to positive student social behavior and engagement with the academic program.

Shared values may also contribute to promoting student membership and commitment. Bryk and Driscoll (1988) observe that shared values may include both norms for instruction pertaining to teaching and learning as well as norms for civility pertaining to relations among individuals in the school. The values related to instruction may involve the purposes of the institution and the activities it undertakes to achieve those purposes. For example, Miachael Rutter et al. (1979) found that schools with a more salient academic emphasis as evidenced by the assignment of homework and high teacher expectations had better attendance and fewer social and academic problems among students. Values related to social relations can also be linked to the core mission of the institution. For example, Lesko (1988) found that the atmosphere of caring that pervaded St. Anne's High School was rooted in the Christian commitment to community and included the norms of offering assistance to others and a prohibition against exploiting others.

THE ROLE OF SCHOOLS IN THE STRATIFICATION PROCESS

In addition to structures and processes that foster a common sense of membership and commitment, schools are also structured and operate to differentiate among students along certain lines. At times this differentiation is nondeliberate or at least not formally intended; at other times the differentiating elements of schools are quite deliberate. Sociologists have examined both the nondeliberate differentiating processes as well as those that are intended. Among the former, particular attention has been devoted to differentiation of students in terms of race, gender, and social class. Among the deliberate forms of differentiation there have been examinations of curriculum, special programs, and special schools.

Studies of the impact of student race and ethnicity in schools have examined the behavior of teachers as well as the social relations among students. Studies of desegregated schools have examined both patterns of teacher behavior (Schofield 1989) and patterns of interaction among students (Patchen 1982). The results of studies such as these suggest that the influences of racial and ethnic status are serious and complex. Investigations have revealed that the patterns of interaction between teachers and stu-

dents and among students lead to different degrees of access to the resources of schooling for students from different ethnic groups. Specifically, Black and Hispanic students receive less access to the resources necessary to succeed in school than nonminority youth (Natriello and Dornbusch 1984). Racial and ethnic minority students, when subjected to differential treatment, are less committed to the goals of the school.

Gender is another basis for the differentiation of experiences in school. The consensus is that boys seem to enjoy advantages in mathematics while girls have an advantage in reading (Brophy 1985; Fennema and Peterson 1985, Fennema and Leder 1990). These differences in school experiences appear to be related to differences in cognitive and behavioral patterns developed prior to entering school (Houston and Carpenter 1985).

A variety of investigations over decades have documented the schooling experiences of students from different social class backgrounds. For example, Eleanor Leacock's (1969) study of urban schools revealed that teachers assumed that lower-class students could not meet the standards set for middle-class students and so lowered their expectations for student performance and their levels of attention to student achievement. Annette Lareau (1989) has explained how schools fail to draw on the strengths of working class families. Both Paul Willis (1977) and Jay MacLeod (1987) have documented how lower class student groups in secondary schools develop norms in opposition to the goals of the schools.

In addition to studying the ways in which schools deal with characteristics such as race, gender, and social class as differentiating factors that they have no role in creating, sociologists of education have also examined the deliberate policies and practices of schools that play an active role in differentiating and stratifying students. Among these practices are curriculum tracking, special education, and schools with special purposes and identities.

The school practice of tracking, that is, dividing students into separate classes along presumed ability lines, has long been a subject of interest to scholars. Various studies have examined the evolution of tracking practices (Oakes 1985; Lucas 1999), the differential access to knowledge offered to students in different tracks (Oakes, Gamoran, and Page 1992), the processes by which students are assigned

to tracks (Gamoran 1992), and the amount of mobility of students among tracks (Riehl, Pallas, and Natriello 1999).

The differentiation of the school program entails differences in both the content of the curriculum and the pace with which students move through it. Students in higher tracks move at a faster pace, have access to more knowledge, particularly in certain areas such as science and mathematics (Vanfossen, Jones, and Spade 1987), and are exposed to more higher-order thinking than those in the lower tracks (Oakes, Gamoran, and Page 1992). Gamoran and Berends (1987) cite a range of ethnographic studies which together suggest that teachers in lower tracks reduce both the pace and complexity of instruction and that such differences are reinforced by the assignment of more experienced and more successful teachers to the higher tracks.

Other studies have examined the effects of race and ethnicity on track placement. Adam Gamoran and Robert Mare (1989) find that black students are overrepresented in the lower tracks, but that this pattern is attributable to black students' disadvantages on other factors. When black students match white students on prior achievement and other background and school factors, they are substantially more likely to be placed in the college prep track than white students. Oakes (1990) finds that black students are more likely to be overrepresented in low-ability science classes than in high-ability science classes.

The concern about the distribution of students in different social groups among the various level tracks is connected both to the segregating effects of tracking and to the disadvantages that might accrue to those in the lower tracks. To the extent that track placement is related to student characteristics such as social class, race and ethnicity, and gender, it would tend to reinforce existing differentiating processes in schools. In the process of differentiating students to attempt to serve them more effectively, those students from traditionally disadvantaged groups may be further disadvantaged.

If tracking and ability grouping differentiate students in terms of where they fall on a continuum of ability, disability grouping differentiates students by designating them as being off of that continuum. Such grouping of students by disability has taken three principal forms in U.S. schools: compensatory education, special education, and bilingual education.

Each of these forms of disability grouping has created separate educational experiences for students within schools. Each is based on a different rationale and understanding of the needs of the students involved. Compensatory education emphasizes the social origins of educational difficulties experienced by children (Leinhardt and Bickel 1989); special education is rooted in material processes of the human body and mind or in neuropathology that lead to learning problems (Carrier 1986); and bilingual education derives from assumptions about the needs of students who are learning a new language of instruction along with other learning challenges.

Compensatory education, special education, and bilingual education have all been organized by dividing the students deemed in need of special services from other students in the school, though each has also been offered in more integrated delivery modes. The segregating effects of these programs of instruction has led to questions about the processes used to select students for such services (Mehan, Hertweck, and Meihls 1986), the same kinds of questions associated with the assignment of students to tracks or ability groups. The social bases for such identification and selection processes have been examined (Barona and Faykus 1992) to determine whether nonrelevant social characteristics lead certain students to be labeled and not others, independent of real learning needs.

The social segregation associated with these disability groupings is viewed as leading to undesirable outcomes for students. Students in integrated settings are found to make more progress in terms of social competence than those in segregated settings (Cole and Meyer 1991). Nancy Madden and Robert Slavin (1983) conclude that regular class placement with adequate supports produces results superior to those from full-time restrictive settings in terms of student self-concept, classroom behavior, and attitudes toward school.

Students may also be divided into groups in schools according to their interests. Such divisions include special theme schools such as those included in magnet school programs as well as special theme programs within schools. Student self-affiliation with special interest schools and programs can be associated with greater student commitment and, indeed, self-affiliation is often a part of the process by which students are divided into groups according to their

expressed interests. However, the positive outcomes associated with self-affiliation tell us little about the overall effects of dividing students along interest lines because such divisions almost inevitably result in some students having to compromise their interests and others never having their interests invoked as the schools involved employ some selection process of their own.

UNDERSTANDING SCHOOL STRUCTURE

Sociologists of education have made important contributions to analyses of school structure. Rational models of organizational structure that emphasize the bureaucratic nature of schools (e.g., Anderson 1982) are enriched by analyses that included more attention to the social dimensions of schools (Bidwell 1965) and the limited technical core or technology available to educators as they try to accomplish their work. Daniel Lortie (1969) identifies the incomplete or mixed nature of the school authority system that treats teachers sometimes as professionals with autonomy, and at other times as workers who must take direction.

When investigations seeking the connections that hold schools and key personnel together failed to find much in the way of substantive ties among those in various school roles, sociologists of education developed alternate models to explain structure. These models argue that the internal connections among major actors within schools were rather loose (Weick 1976, 1981), and suggest looking to the external environments of schools as sources of their cohesion. These environmental approaches suggest that schools are structured by the expectations held for them by those in their external environments (Meyer and Rowan 1977, 1983). From this perspective schools are viewed as institutionalized organizations, organizations for which there are clear and agreed upon understandings held by those outside of the immediate organization, that serve to organize internal operations. The development of these multiple perspectives on school organization and operations has led to a somewhat blended model to explain the operations of schools, with some placing more emphasis on the internal bureaucratic connections among elements of the school (Herriott and Firestone 1984) and others focusing more attention

on the external environments of schools as an important organizing force (Meyer and Rowan 1983).

Gary Natriello

SOCIOLOGY OF CLASSROOMS

Sociological work at the micro level has focused primarily on interaction among teachers and students in classrooms. This work begins with the assumption that the classroom group may be considered a small social system with some of the same processes and structures found in larger systems (Cohen 1972). Sociological work in classroom settings has examined the full range of interaction. Three themes capture much of the work of sociologists concerned with life in classrooms: processes that promote fostering commitment and order, processes that serve to differentiate students from one another, and the sociology of knowledge as a perspective on the curriculum that defines the substance of work in classrooms.

FOSTERING COMMITMENT AND ORDER

Talcott Parsons (1959) observes that students in classrooms are socialized to develop commitments necessary for their future roles in society and that these commitments involve both acceptance of broad social values and acceptance of the need to perform a specific type of role within the structure of society. Parsons talks about much of the initial socialization work being accomplished within the elementary school classroom early in the educational careers of students. Organizing classes so that students are assigned to a single teacher for a year at a time is a key part of setting the conditions for socialization. Charles Bidwell (1965) notes that commitment to the student role is largely the result of a close, warm relationship between the student and the teacher. The arrangement of elementary classrooms provides the structure within which such a relationship can develop. In addition to the personal relationship with the teacher, elementary classrooms can have various rituals connected with them that can enhance the sense of membership in the class.

Commitment to the student role is only part of maintaining order in classrooms. Order involves un-

derstanding the expectations for all classroom members, both general and specific expectations. It also involves being able to anticipate how others in the classroom will behave and believing that it is proper for everyone to behave in this way. Finally, order requires that most students conform to the expectations most of the time (Cohen, Intili, and Robbins 1979).

Sociologists have considered the conditions within classrooms that promote order. These include a set of tasks that are deemed clear, reasonable, and appropriate for the student, and for which there are adequate resources for completion (Cohen, Intili, and Robbins 1979). The arrangement of tasks within classrooms can contribute to building commitment to the extent that everyone participates in the tasks and is treated justly and fairly.

The system for evaluating student performance on assigned tasks also plays an important role in maintaining student commitment and order in the classroom. When tasks are not clear or when the bases for the evaluation of student performance are not clear, when students cannot predict how to act to achieve acceptable evaluations, or when expectations for student performance are unreasonable or contradictory, then students become disengaged from classrooms and their assigned tasks (Natriello 1996). Under these conditions students can withdraw effort from classroom tasks, act out, or even drop out of school. Such disengagement behaviors can start with one or a few students, but if the underlying conditions are not modified, the entire class can then become less fully committed and engaged in the work assigned to them.

DIFFERENTIATING AMONG STUDENTS

While investigations of the conditions for membership and order in classrooms concentrate on features of classroom life that bind students together, other investigations have focused on processes that serve to push students apart by differentiating some students from others. Work on the differentiation of students along racial and gender lines illustrates how sociologists of education have approached the issue of the social distinctions operating within classrooms.

At the classroom level studies of teacher behavior and teacher-student interaction have drawn from the teacher expectations tradition (Cooper, Baron, and Lowe 1975) that focuses on teacher behaviors that

might disadvantage students of minority racial and ethnic status. Early findings that teachers acted in ways that disadvantaged racial and ethnic minority students have given way to more sophisticated analysis suggesting that teachers react to immediate student performance and behavior as a result of the social organization of schools and that performances and behaviors that provoke disadvantageous patterns of teacher behavior are more likely to be associated with racial and ethnic minority status (Rist 1970; Natriello and Dornbusch 1983).

Studies of student interaction at the classroom level have come from the literature on classroom interaction and student behavior (Cohen 1982). Early studies that found that majority students harbored prejudices against minority students and engaged in student behaviors that excluded them from full participation in classrooms have given way to more recent studies, which produced more complex understandings of the ways in which both minority and majority students act to create patterns that disadvantage racial and ethnic minority students in the school (Fordham and Ogbu 1986; Miller 1983). Strategies for overcoming such impediments to full membership have included efforts to modify interracial interaction in classrooms (Cohen and Roper 1972).

Gender differences among student peers both in school and out are dominated by what Marlaine Lockheed (1985) noted as the tendency of children to segregate themselves on the basis of sex. Such sex segregation extends to verbal exchanges, work group membership, and friendship choices (Lockheed and Harris 1984; Hallinan and Tuma 1978), and beyond the classroom to the lunchroom and the playground (Thorne 1993). Janet Lindow, Cora Marrett and Louise Wilkinson (1985) observe that the tendency for children to associate with same-sex peers may stem from gender differences in behavior with boys being more active and aggressive and girls being more passive and compliant. This distinction was born out in Barrie Thorne's (1993) observations of elementary school students on playgrounds. Whatever the causes, the division of students along gender lines may lead to gender inequities as well as sex-role stereotypes (Lindow, Marrett, and Wilkinson 1985).

But segregation is not the only problem associated with differentiation along gender lines in schools. Research has also examined the potential for unequal

interaction by gender. For example, research on the operation of sex as a status characteristic has suggested that males are expected to be more competent than females and so are more likely to assume positions of influence in a group. Marlaine Lockheed and Karen Hale (1976) have shown that when group members have no previous experience with the material discussed in the group male high school students dominate group activity. Examining high-achieving eighth grade math classes, Noreen Webb and Cathy Kenderski (1985) found that males were more successful than females in obtaining help from peers when they requested it. Females were more responsive than males to requests for help. These patterns were related to the kinds of questions asked, with males more likely to ask for specific information and females more likely to express general confusion.

Attempts to address the problems associated with gender-based differentiation in schools have taken the same two forms seen in attempts to address the problems associated with differentiation along racial and ethnic lines. There have been efforts to identify, understand, and achieve conditions that promote equitable interaction across gender lines (Thorne 1993; Lindow, Marrett, and Wilkinson 1985; Lockheed and Harris 1984) as well as arguments that single-sex schools are more advantageous for female students than coeducational schools (Riordan 1990). Both strategies attempt to overcome the disadvantage effects of gender differentiation in schools.

The major differentiating dimension within classrooms is intended to be student achievement. Indeed, classrooms are structured to highlight differences in student achievement. The assembly of students in schools makes racial/ethnic and gender differences immediately apparent. The performance demands of schools make ability differences salient nearly as quickly and directly. What features of schools and classrooms lead to the formation of conceptions of ability that allow students to differentiate themselves and their peers in terms of ability? Studies of the formation of ability conceptions (Rosenholtz and Wilson 1980; Rosenholtz and Rosenholtz 1981; Simpson and Rosenholtz 1986) have identified the unidimensional organization of tasks in classrooms as a set of key conditions that permit students to differentiate themselves by ability. Unidimensional classrooms are characterized by (1) undifferentiated task structures that facilitate social comparisons, (2) low

levels of student autonomy that restrict the variety of tasks and prevent students from forming their own evaluations of their performance, (3) the use of whole class instruction that makes student performance visible to all, and (4) the emphasis on grading as a clear unidimensional evaluation by teachers (Cohen 1985).

The unidimensional structure of classrooms leads students to form clear conceptions of their own ability and that of their peers. Carl Simpson and Susan Rosenholtz (1986) have found that unidimensional classrooms lead to more differentiated ability conceptions within classroom groups as well as to development of more generalized ability conceptions as students extend their view of themselves as more or less able to new and different tasks. Moreover, they report at least some evidence that unidimensional classes are associated with distributions of student power and popularity with students conceived as more able being more powerful and more popular. In addition, they report that students' liking for school as well as student effort and engagement are more dependent on ability level in unidimensional classes.

Much of the research on the formation of ability conceptions has taken place at the elementary level and, indeed, a key finding is that such ability conceptions begin to form in first grade (Simpson and Rosenholtz 1986). Students, no doubt, carry these conceptions and the patterns of behaviors and attitudes associated with them into secondary schools where at least the potential for more differentiated ability conceptions, as a result of multiple classes and teachers, is present. Moreover, research on adolescent students (Kramer 1991) suggests that social interactions in school continue to influence self-perceptions of ability, which then influence decisions about appropriate achievement-related behavior. The overall conclusion is that the social and organizational arrangements of formal schooling set in motion processes by which differences in ability, even relatively minor ones, become salient.

SOCIAL ASPECTS OF THE CURRICULUM

Sociologists of education have considered the social organization of knowledge as represented in the school curriculum from several perspectives (Young 1971). Each of these perspectives contributes to our understanding of how the curriculum is shaped by

the larger society and how the curriculum, in turn, shapes the schooling experiences of students.

The social organization of the curriculum has received attention. Basil Bernstein (1975) considers the curriculum in terms of the principles by which units of time and their contents are brought together in relationship to each other in schools. Two key dimensions are the amount of time devoted to a content area and whether study in an area is compulsory or optional. Content areas given more time and those that are required have higher importance or status than those given less time and those considered optional.

Bernstein also considers the relationships between content areas in terms of whether the boundary between them is clear and unambiguous or whether it is blurred. Content areas can be well insulated from one another or they can be open. Bernstein uses the term "classification" to refer to the relationship between content areas; strong classification means the content areas are well insulated from each other by strong boundaries.

Bernstein uses the term "frame" to refer to the strength of the boundary between what may be transmitted and what may not be transmitted in a pedagogical relationship. When framing is strong, the boundary between what is permissible and what is not is sharp and clear.

The strength of classification and the strength of framing may vary independently, and Bernstein uses this set of terms to discuss the influence granted to teachers and students in different educational systems or different educational programs. Strong classification reduces the power of teachers over what may be transmitted because it prevents them from stepping over content boundaries. Strong classification can also create a strong sense of membership and even identity in a particular class as the members of the class are granted access to content that is denied to others. Strong framing reduces the power of the pupil over what, when, and how knowledge is received as it increases the power of the teacher in the pedagogical relationship.

The social definition of knowledge has also been the subject of investigation. Here a key question concerns what knowledge is worth knowing, or, put another way, what knowledge is most important to possess. Sociologists of education have pointed out how groups within society use their power and influence to determine what knowledge is included in

the local or national curriculum, at least in part to secure advantage for themselves and their children by seeing to it that knowledge more likely to be possessed by people like themselves is included and deemed essential. So, for example, knowledge associated with high culture, may be included in the curriculum, while knowledge associated with street culture is excluded. Ivor Goodson (1992) provides an analysis along the same lines to explain the battles over whether to include science, particularly applied science, in the school curriculum in the nineteenth century. Adding science to the school curriculum was deemed dangerous by those who were influential because it allowed education to be more easily related to the cultural experiences of the lower orders. J. Shepherd and G. Vulliamy (1983) examine the treatment of music in the school curriculum in a cross-cultural framework and find that a clash between "school music" and "student music" evident in England was not found in schools in Ontario in Canada due both to the wider scope of what counts as school music in Ontario and to the noncompulsory nature of music study there. Analyses of other contemporary examples of how knowledge becomes part of the curriculum have examined ways in which the curriculum is used to legitimate certain political positions and perspectives (e.g., Anyon 1983).

Of course, the analysis of how certain knowledge becomes part of the curriculum would be incomplete without a corresponding examination of the social distribution of knowledge that is part of the accepted curriculum. The discussion of curriculum tracking above detailed some of the differences in the content available to students in different tracks within a school. There are also differences associated with student social class background, student race/ethnicity, and student ability. In addition to differences within schools, there are differences across schools associated with neighborhoods that differ by social class, differences by state, differences by racial/ethnic groups, differences by school in the case of special theme schools, and differences by sectors within higher education. Indeed, some of the effort of the contemporary school reform movement has been directed toward reducing the differences in the content knowledge made available to students in these different circumstances.

Gary Natriello

SOCIOLOGY OF SCHOOL IMPROVEMENT

The work of sociologists of education that chronicles the social dimensions of education at multiple levels leads easily to suggestions for reforming the educational system (Borman et al. 1996). Policymakers and practitioners regularly draw lessons from the reports of sociological research. Somewhat less common have been the efforts of sociologists themselves to design, implement, and evaluate programs and other interventions to improve schools. Four aspects of school reform seem particularly appropriate for consideration of policy-related work in the sociology of education: raising standards for students, reforming the system of financing schools, restructuring schools in a comprehensive way, and improving instruction of students in groups.

STANDARDS AND TESTING

The school reform movement of the last several decades has recognized the need to raise standards for student performance in schools so that students will be better prepared to function as adults in rapidly changing modern societies. The work of sociologists of education (Natriello and Dornbusch 1984) highlighted the low standards to which students were being subjected in U.S. schools. In particular, these studies explained that teachers had the lowest expectations for the performance of minority students, and these expectations resulted in lower standards. Minority students, in turn, devoted relatively low effort to their schoolwork.

Efforts to raise standards have taken a number of different forms over the past two decades. These have included increasing the requirements for teacher preparation, focusing the curriculum and eliminating courses deemed less demanding of students (Alexander and Pallas 1984), and subjecting students to more demanding standardized assessments of their performance. This last strategy of increasing reliance on standardized tests has been considered by a number of sociologists of education whose work offers various types of advice to insure that standards and testing do not operate to produce unintended negative effects.

For example, Edward McDill, Gary Natriello, and

Aaron Pallas (1986) highlight the potential for higher standards to increase the dropout rate among at-risk youth unless additional resources and supports were provided to help them achieve the higher standards. H. Dickson Corbett and Bruce Wilson (1991) describe the responses of one school district to standardized testing and cautioned that school-based educators may not be in a position to engage in the demanding and thoughtful educational programs envisioned by the policymakers setting the new higher standards. Kinnon Sheldon and Bruce Biddle (1998) suggest that the motivational impact of using tests to raise standards will result in students who are less likely to be lifelong learners. Linda McNeil (2000) argues that the standardized testing program in Texas actually impairs teaching and learning. Gary Orfield and Mindy Kornhaber (2001) marshal evidence that shows the complexities of implementing testing programs to achieve higher standards. Paul Weeden, Jan Winter, and Patricia Broadfoot (2002) maintain that the seemingly better test results in the United Kingdom do not mean that students are becoming better and more independent learners.

REFORMING SCHOOL FINANCE

The standards movement and the increasing reliance on standardized tests that accompanied it have provided a common well-defined set of expectations or outcomes for student performance in state after state. What the standards and testing initiatives did not provide is the resources to enable schools to prepare students to meet those standards and succeed on the tests. The gap between standards and resources is particularly acute in school districts serving large proportions of poor and minority students. This is a peculiarly American problem as the United States is virtually alone among modern states in funding education at the local level where the wealth of the immediate community substantially determines the resources available for schooling. This arrangement means that poor and minority students, those students whose educational needs are the greatest, are in communities and schools with the most limited resources.

Sociologists of education have considered the problem of unequal resources from several perspectives. Jean Anyon (1997) provides an historical analysis that

traces the problems of urban schools to the political and economic weakness of urban communities. She marshals evidence to show that social class and racial differences contribute to the impoverishment of urban communities and their schools and calls for broader social reforms. Doris Entwisle, Carl Alexander, and Linda Olson (1998) trace the problems in the school performance of adolescents to their earliest schooling experiences in poor urban schools. Using a life course perspective, they show how problems set in motion early persist throughout the schooling career and into adulthood.

William Firestone, Margaret Goertz, and Gary Natriello (1997) construct a multimethod case study of an effort to reform school finance to provide more equitable schooling experiences. Drawing on data on community conditions, the student populations, and schooling resources, they show how poor urban and rural schools are less able to meet the needs of their larger proportions of students at risk of educational failure. Even with the additional resources promised by finance reform, the schools serving disadvantaged students in their study continue to lag beyond their more well-off counterparts.

RESTRUCTURING SCHOOLS

Sociologists of education have long studied the structure of schools as social organizations (McDill and Rigsby 1973; Meyer and Rowan 1983; Tyler 1988). They have examined the impact of efforts to restructure schools as part of the school reform movement (Lee and Smith 2001).

A particularly active approach to school restructuring has been adopted by Legters et al. (2002) who have developed a model program for restructuring urban high schools to make them more effective at promoting student learning and achievement. The model encompasses a number of elements identified in earlier research that appear to enhance the chances for student success. Among the key aspects of the model they call the "talent development model" are an approach to involving faculty in the development

of the model, a focus on the initial grade in school for socialization purposes, longer class periods, career academies to link students to desirable futures, and investments in creating curricula that develop higher order thinking skills. This active program of school restructuring has been implemented in high schools and middle schools in high-poverty urban areas with encouraging evaluation results.

IMPROVING GROUP WORK

As part of efforts to understand social interaction in classrooms, sociologists of education have examined the nature of groupwork and student work groups (Slavin 1989), and they have worked to develop strategies for cooperative learning (Slavin 1983). Particular attention has been devoted to the interaction patterns among students with different status characteristics such as race, ethnicity, and gender, and to how such differences might lead to differential access to classroom resources as a result of differences in the opportunity to participate in group activities (Cohen and Roper 1972; Cohen 1982; Cohen, Lotan, and Catanzarite 1990).

Elizabeth Cohen (1994) has developed a program of research and development that has led to the design of groupwork strategies for classrooms where there are students with diverse background characteristics. These strategies provide guidance to teachers who wish to structure groupwork to promote equal participation and learning among diverse students. The process involves preparing students for groupwork by setting expectations for participation and structuring active roles for each member of the group. The approach also entails designing tasks that require all participants to engage in higher order thinking and to collaborate with their peers. Cohen's strategies have been implemented in classrooms in the United States and abroad (Cohen and Lotan 1997), and they represent a major application of the sociological approach to understanding social processes in classrooms.

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EQUITY AND CULTURAL ISSUES IN EDUCATION

The pursuit of equity has been central to the development of the United States. Much of what has transpired around issues of equity has resulted in the production of civil documents that attest to the history of peoples and their pursuit of equity. The pilgrims leaving England to seek life in a new land, free from religious persecution, and the subsequent drafting of the Mayflower Compact (1620) is one early example. The compact declares “the enacting of just and equal Laws, Ordinances, Acts, Constitutions, and Offices . . . [is] for the general good of the Colony.” The making and breaking of Indian treaties between European settlers and Native Americans further attests to peoples’ struggles in the United States over equity. The Declaration of Independence, U.S. Constitution, Bill of Rights, Emancipation Proclamation, Nineteenth Amendment (1920, granting women the right to vote), Executive Order 9981 (setting in motion the elimination of racial discrimination in the armed forces), Civil Rights Act (1964), the 1965 executive order of President Johnson (Affirmative Action), and the Americans with Disabilities Act (1990) are also examples of “equity” documents. These documents declare a movement away from “business as usual” to a newer and fairer way of thinking about equity.

Joseph Murphy (1992) offers three approaches to thinking about equity:

- (1) The “competitive/utilitarian” ethic argues that true excellence can only be achieved if the performance of “historically marginalized students rises dramatically.”
- (2) “Social justice” increases the “political clout of minority groups.”
- (3) The “caring ethic” approach argues that the

well-being of all people is “inextricably linked,” and that “equity of access to developmental opportunities will result when caring is emphasized.”

Considered individually or collectively, for most educators, these approaches encourage and legitimate their support of equity. However, Floretta McKenzie (1993) does remind us that any overarching set of beliefs usually has a single point of view that has more widespread recognition than another point of view. The cause for this is often the changing economic and political conditions in society. Such is the case with the civil rights movements of the 1960s and 1970s, which gave people of color and other marginalized groups increased political clout and helped to bring about improved dispositions toward issues of identity including race, disability, gender, sexuality, and religion—not only in society, but also in the realm of education. Thus, the pursuit of equity in the United States, while constant, involves competing and conflicting interests that serve to expand the United States’ citizenry and its developing conception of equity.

The pursuit of equity has driven educational reform. *Brown v. Board of Education* (1954), the Bilingual Education Act (1968), Title IX of the Education Amendments of 1972 (prohibition of discrimination on the basis of gender), the various mission statements of ethnic studies departments and programs at colleges and universities written during 1960–70, Public Law 91–142 (Education for All Handicapped Children [1975]), and the No Child Left Behind Act of 2001 (NCLB) address issues of equity. Many of these documents reflect the efforts of policymakers and common citizens fighting for social justice. For instance, in the case of Public Law

91–142, parents of children with disabilities pushed for legislation that would acknowledge and secure their children’s right of access to education. During the 1960s and 1970s, college students launched the ethnic studies movement. Equity argues for the full inclusion of people otherwise relegated to the margins of society in general and of societal institutions such as schools.

In education, attention to equity at the level of policy and curriculum most often takes place in mathematics and science. This is because of the importance of mathematics and science to national interest. E. Linn (1993/1994) argues that in science and mathematics education, equity is an issue of “fairness” as well as one of “national self-interest.” The fairness that Linn addresses is associated with discussions of culture and its connections to equity. R. A. Barrett (1984) claims that culture is “the body of learned beliefs, traditions, and guides for behaviors that are shared among members of any human society.” Culture, according to W. Goodenough is “a system of standards for perceiving, believing, evaluating, and acting.” The cultures of peoples, it is argued, needs to be central in the system of standards for perceiving, believing, evaluating and acting by which citizens live their lives. E. Franklin Frazier’s *Black Bourgeoisie* (1965), Ronald Takaki’s *Strangers from Different Shores* (1989), and Earl Shorris’ *Latinos* (1992) all address Barrett and Goodenough’s views on culture, and they speak to the influence of culture in the struggle for equity.

Since the 1970s, educators have increasingly referenced culture in relation to educational concepts and practices. Cultural pluralism and multicultural education are two examples. In 1915, Horace Kallen introduced the concept of “cultural pluralism.” He argued that cultural pluralism was essential to democracy and that society should be diversified and unified (Gollnick 1997). Thus, cultural pluralism suggests acceptance and affirmation of cultural diversity, equality among groups of people, and a commitment to broadening society’s recognition and appreciation of diversity. Some educators welcomed this more liberal way of thinking and applied the concept of cultural pluralism to education policies and practices. Cultural pluralism became (and still remains) for educators one way to bring together discussion of equity and culture in education.

Multicultural education is an outgrowth of the Civil Rights and Ethnic Studies movements of the

1960s and 1970s. It was supported and sustained by the work of several scholars including Carl Grant, Geneva Gay, Christine Sleeter, and James Banks, who argue for the acceptance of cultural pluralism, alternative lifestyles, social structural equality, power equity among groups, culturally relevant teaching, social justice, and social action wherever necessary. Concepts such as cross-cultural competency, cultural studies, cultural shock, cultural styles, and cultural transformation have become very much a part of the discourses on culture and equity. In addition, some of these concepts (e.g., culturally deprived and culture of poverty) have spun heated public debate and most have produced a large volume of text (e.g., culturally relevant pedagogy and cultural studies).

Some educators have specific ideas about the meanings and roles of culture in education. E. R. Hollins (1997), for example, argues that learning should address culturally mediated cognition. Within this argument, cognition and culture are mutually constructed during a child’s growth and development. Additionally, Hollins (1997) argues that learning should include culturally valued knowledge. This concept suggests that quality and quantity of attention, as phenomenon, and the framing of perception are important in determining what constitutes culturally valued knowledge. This is accomplished more successfully when the learner and those who design school practice share or have an excellent history and knowledge of the surrounding culture. Moreover, Hollins argues for culturally appropriated social situations for learning. During enculturation (as part of understanding the world into which an individual is socialized) attention should be given to social relationships and social interactions with other individuals in specific situations, for specific purposes, and under specific conditions. The understandings acquired through this socialization process direct individual social behavior, as well as what is anticipated in the behaviors and responses of others. “These factors influence the efficiency and potential effectiveness of specific instructional approaches, curriculum designs, and social arrangements for learning for those from different cultural and experiential backgrounds” (Hollins 1997).

Attention to the influence of culture and equity on educational policy and practice, curriculum, instruction, and research/scholarship is increasing. Research on schooling has increasingly paid atten-

tion to and supported diverse cultures and equity. George Spindler's (1982) edited volume *Doing Ethnography of Schooling: Educational Anthropology in Action* was an early contribution to research that took into account issues of equity. *Doing Ethnography* helped scholars and researchers become aware of their need to pay attention to equity issues when they are conducting research, and to explain the significance of understanding how culture and equity are played out in schools and classrooms. Spindler states:

Our discipline emerged as a by-product of a colonialized world where exotic "have nots" were studied by scholars from the "haves." That we fostered receptivity for cultural differences and argued for cultural self-determination, encouraged respect for the integrity of other cultures and worked against ethnocide is not to be denied . . . [W]e collected knowledge, facts, and insights from politically powerless people largely outside the benefit structure of modern economic and political systems. In doing so we gained a better understanding of the world and we built a discipline. (1982, 4)

The interconnection of culture and equity, and the significance of each to the lives of people cannot be overstated. Shorris's (1992) story about Bienvenida, a woman who never learned to speak English, makes this clear. Shorris states:

Although Bienvenida was not old when she came to the United States, she held on to her language and culture as if they were life itself. Indeed, when she died, it was not of illness but of English, for she had been condemned to a nursing home where no one spoke Spanish. (p.3)

THE ENTRIES

Four related themes link the thirteen entries in this chapter: conceptions of equity, identity and equity, at-risk students and equity, and strategies for equity. Jamel Donnor, Garrett Albert Duncan, and Walter Secada address conceptions and issues of equity. Anthony L. Brown, Scot Danforth, Adrienne Dixon, Stacey J. Lee and Angelina Catagno, Kevin K. Kumashiro, and Michael Thornton explore issues related to identity and equity. Keffrelyn D. Brown

explains how the at-risk concept/label is triggered when students are different from mainstream culture. Thandeka Chapman and Nikola Hobbel, Pepi Leistyna, and Karen C. Spear-Ellinwood and Luis C. Moll discuss how three concepts and strategies—multicultural education, critical pedagogy, and home-school relations—are used to address equity issues within a context of culture. The entry authors' discussions of culture and equity are not linear, static, or time bound. They address how conceptions of equity shift over time, and acknowledge the historical and social context that shapes the culture and equity discourse. Also, the entry authors critique assumptions of knowledge and what counts as knowledge and ways of knowing. In addition, the authors analyze race, class, and gender issues within the culture and equity discourse. They also illuminate the theoretical challenges facing this discourse.

Carl A. Grant

EXAMINING THE OTHER: THE OTHER IN EDUCATION

Critically examining notions of difference within a diverse society is crucial to understanding social relations. For example, race, religion, gender, and class difference have historically defined and shaped social interactions in the United States. Although these aspects of difference and diversity have brought a unique richness to social interactions, they have also brought varied degrees of contention and conflict. Historically, tensions around difference have had a lasting effect on the representations and images of particular groups of people. These perspectives of difference have generally produced an "us against them" dichotomy that has polarized communities of people around what is perceived as "different" and what is viewed as "normal." Here, those people and groups positioned as "us" symbolize normality, while those positioned as "them" are characterized as abnormal and not fitting in.

Certainly this type of "us against them" dichotomy can arise in most social situations where there are people of different backgrounds; however, what makes this perspective significant is the impact it has

on the life chances of particular groups of people. In recent years social theorists have referred to this process as “othering” or the making of the Other. Othering can be defined as a strategy of symbolic exclusion that is used to create artificial boundaries of race, culture, religion, sexuality, and gender difference.

The Other is a symbolic representation of abnormality or potential threat to what is viewed as normal. Within the social context of a community or an institution where homogeneous ideas, culture, gender, religion, and race exist, individuals, communities, and/or beliefs seen as “different” are generally constructed as the Other. For example, this process of othering can be explored through different contrasting social relations such as male/female, black/white, native/foreigner, and heterosexual/homosexual. This process of othering renders the Other as silent and spoken for, seen but not recognized, and imprisoned within an identity that has been predicated on myths, stereotypes, and false representations (Pickering 2001).

GENDER OTHERING

As previously noted, the process of othering generally involves two contrasting categories of people. Within traditional gender relations, this process has developed through contrasting and stereotypical meanings of who and what is defined as a “man” and who and what is a “woman.” Historically, within western societies, the defined societal roles each sex played was associated with the so-called progression of modern civilization. In other words, as nations developed, the boundaries of male roles and female roles became much more prominent. For example, in the United States these boundaries were generally arranged according to the roles men and women served within domestic and public life. The norms for both men and women were rigidly defined through social meanings associated with emotions and physicality. Within this gender context the man was defined as strong, rational, responsible, individualistic, stoic, and strong-willed, while women were stereotypically characterized as weak, irrational, caring, and nurturing. These descriptions placed men and women in very fixed societal roles. While men were able to move in and out of domestic and public life, women were generally confined to the role of mother and home-

maker. Although one can argue that within this context both women and men are limited to particular representations, feminist scholars have pointed out that women’s identities are often defined by a male norm.

In *The Second Sex* (1984), Simone de Beauvoir explores the notion of woman as Other by examining stereotypes that men historically constructed about women. Her central argument was that the objectification of women is what made them the second sex, or “sexualized Other.” De Beauvoir (1984) further states that through objectification women were constructed as what she called an “eternal feminine” symbolic boundaries of woman as dutiful, caring, and irresponsible. De Beauvoir states, “One is not born a woman; rather one becomes a woman” (p. 295). This quote illustrates that gender is socially produced and that gender inequalities are not a fact of nature. By the 1960s, feminist scholars and activists in the United States began to aggressively challenge this notion of women as Other in various social contexts. During this time, feminists in education began to point out how school cultures and curriculum in K–12 and higher education settings produced conditions that reinforced the construct of women as Other (Pinar et al. 2000).

GENDER OTHERING IN A SCHOOL CONTEXT

Feminists in education point out that the same cultural paradigms used to conceptualize females as the “sexualized Other” permeate school settings and contend that school may in fact serve as a primary institution for “educating” students about what is stereotypically male and female. Scholars have argued that the female is othered within all aspects of the school, including in the curriculum and in social relations (Bank and Hall 1997; Pinar et al. 2000). These scholars commonly suggest that school curriculum in the United States reproduces sex role stereotypes and produces the conditions for females to “opt-out” of particular subjects and schoolwide activities (e.g., sports, math, science, and technology). The female student as Other often impacts social relations within K–12 educational settings. It is not uncommon to hear boys in school say “you throw like a girl,” implying that “girl” codifies a natural or inferior physical ability in relation to boys. Or if a

boy reflects a certain emotion, such as crying, caring, empathy or concern, they might receive messages to “quit acting like a girl.” In these cases the school context illustrates how social relations and interactions harshly place cultural boundaries of male and female around a rigid conception of women and girls as the Other.

RACIAL OTHERING

Historically, race has been inextricably linked to the notion of the Other. As previously mentioned, this process of othering requires the use of an us and them binary, where one group of people is perceived by another group as different or abnormal. Like gender, racial othering attempts to position and solidly fasten in place an irrevocable schema about a particular racial group. Through the use of stereotypes and generalizations, permanent meanings of human behavior, culture, and intelligence are conceptualized through a racial lens. Since the fourteenth century skin color and phenotype have been used as a measurement of human behavior. Winthrop Jordan's *Black Over White* (1968) examines this notion of the Other over time by describing the initial interactions between English travelers and Africans.

Jordan (1968) argues that English travelers saw the Africans as a libidinous kind of people incapable of civil behavior. Countless entries in English travel journals consistently referred to African cultural difference and religious practice as being more acutely different than English culture. However, the most arresting characteristic of difference they recorded was the skin color of the African. References to the African and North African dark skin tone were often described through the exaggerated description of *black*. Jordan (1968) contends that the powerful impact that skin color had on Englishmen led them to develop a schema of color and blackness linked to human behavior and culture. In other words, their descriptions of Africans as savage and libidinous were equated with the blackness of their skin. Through the nineteenth and twentieth century, skin color continued to serve as the primary marker for racializing the Other. For example in the United States, black skin codified an inferior racial status, which resulted in social policies that barred black Americans from equal access to jobs, housing, and education. To justify such social practice, scientists in Europe and

throughout the United States developed a “scientific” racial hypothesis. These scientists claimed that particular groups of people such as those with darker skins had a limited, genetically inherent capacity for intelligence, thus justifying their social status as a *natural* consequence of their race (Pickering 2001; Scott 1997).

However, not all groups of people described as Caucasian were excluded from this hypothesis of the racial Other. During this period references made to people of Irish ancestry were based upon a racialized lens that made fine distinctions between “types” of European people. The Irish were positioned against an English or German conception of whiteness, which was generally described as an ideal representation of the Caucasian race. This process of “white othering” disassociated and symbolically excluded the Irish from mainstream society. Several caricatures were used to depict the Irish as a “unique” kind of Caucasian. They were described as backward, dark, low-brow, debased, disorderly, and naturally inferior (Pickering 2001, 142). Also it was not uncommon in Britain and in the United States to draw parallels between the Negro and the Irish (i.e., the Irish were referred to as the “European Negroes”) (Jacobson 1998, 9). However, while this type of “white othering” marginalized many white European (e.g., the Polish and Italians) immigrant groups, skin color generally served as the primary marker for racial othering throughout the twentieth century.

RACIAL OTHERING IN A SCHOOL CONTEXT

Exploring this notion of the Other within a school context reveals how students of color are categorized and sorted according to various generalizations and stereotypes. Since the 1970s scholars in the field of education have increasingly argued that schools are not neutral institutions. Schools reinforce and reproduce existing mainstream, societal norms and beliefs. Also studies reported that race is implicitly and explicitly used to negatively impact a child's educational experience (Ferguson 2001; Lee 1996). Consistent with the notion of othering, various “us” and “them” relations emerge within schools to define particular racial groups as “dumb,” “smart,” or “intelligent.” For example, in U.S. schools it is not uncommon to see African American boys solely characterized as

“premier” athletes, yet never positioned as “scholars” or pressured to take advanced or college level courses. This is not the case for Asian American students, who are typically over-generalized as the “model minority,” because of their perceived high academic ability. Stacey Lee’s *Unraveling the Model Minority* (1996) illustrates how the notion of Asian American students as the model minority emerges and is sustained in relation to a perception that African American students are generally lazy, undisciplined, and unintelligent. Lee (1996) reports that ascribing such an identity to Asian American students over-generalizes their experiences and silences them in critical discussions around race and schooling.

UNRAVELING THE NOTION OF OTHER

Understanding the effects of othering in various social contexts, including schools, is a complex task. Simple solutions such as color-blind or gender-blind identity politics offer ineffective strategies when unpacking the multiple historical and socially produced layers that have created these conditions. The notion of the Other is a strategy for condensing various images into a fixed ideological construction of otherness that can serve as a way to rationalize hostility and bigotry (Bhabha 1993). Unraveling the social production of the Other requires an analysis that examines how this concept emerges over time within both the local and global context. This type of analysis will allow schools, workplaces, government agencies, and various other spaces to ask questions and explore solutions that can more effectively counter the making of the Other.

Anthony L. Brown

ACADEMIC RISK, SCHOOLS, AND U.S. SOCIETY

Today, it is not uncommon to hear the term “at-risk” used in educational circles when referring to particular populations of students believed more likely than their peers to experience low academic achievement and educational attainment. In 2002, the National

Society for the Study of Education published *Educating At-Risk Students* (Stringfield and Land 2002), an edited collection of essays devoted to the examination of educational risk at the K–12 levels. Collectively, this text highlights the importance educational researchers and U.S. federal policy place on understanding and addressing the idea of risk; the U.S. Department of Education (USDE) and the Office of Educational Research and Improvement (OERI) funded all of the research included in the collection. Such efforts reflect a longstanding trend in education and the social sciences that assume it necessary to clearly identify students who seem both less likely than their peers to experience academic success and who present a challenge in the learning and teaching process. It is perhaps not surprising that traditionally, these students have generally come from backgrounds positioned as marginal or different from mainstream (i.e., white, middle class) U.S. society. Policymakers and educators alike have justified such practices because of fears that traditional “American” values, as well as economic viability will suffer if there is not some plan of risk identification and intervention in place.

EXAMINING THE TERM “RISK”

When considering the idea of risk, clarification of the term and its usage is vitally important. The idea of risk denotes fear or chance of impending, probable danger. While noting that the origin of the word risk is unknown (Luhmann 1993), authors typically agree that during the Middle Ages in Europe, the term had significant application in the navigation and trade fields (Ewald 1991; Luhmann 1993). During this time, magic, along with elements of Christianity, formed the foundation of many peoples’ belief systems; threats and dangers were understood in ways that helped individuals feel they had some control over their lives. The idea of the supernatural (both a vengeful God and an evil Satan) was a commonly accepted aspect in the notion of superstition, which was often relied upon to deal with both the evil and the unknown. Here, risk was associated with natural events, such as storms, floods, or epidemics and was characterized as a danger associated with the acts of God, rather than the direct result of human fault (Lupton 1999). Then, as well as now, risk evoked the ideas of uncertainty and potential damage, par-

ticularly in relation to some item of value, whether loss of property or life. It was not until the eighteenth and nineteenth centuries that modern European and American societies viewed risk as something to be actively avoided or at a minimum managed, except during those times when the potential benefits of some risky action outweighed the possible dangers or costs. As such, risk could denote either “good” or “bad” qualities.

Today, literature focused on risk spans a variety of academic and social fields. This work covers various aspects and perspectives associated with the science of risk, including risk calculation, risk assessment, risk evaluation, and risk management. When organized in this manner, risk becomes something capable of rational observation, measurement, and analysis, ultimately allowing those concerned with risk some strategic methods for gaining a sense of control over an unwieldy, uncertain risky future. This perspective on risk represents ways of thinking that emerged in the nineteenth century in Western European countries and in the United States. These perspectives made it possible to control the future, by way of the present, through the use of probability and statistics.

I. Hacking (1990) traces the connections between the eroding views of the natural world as determinant and the formation of laws of probability that applied to the characteristics of people. Prior to the 1900s, probability, or the “doctrine of chances” was viewed as the “defective but necessary tools of people who know too little” (Hacking 1990, 1). During this time rational thinking prevailed with the assumption that probability reflected too closely the notions of “chance, superstition, vulgarity, [and] unreason” (p. 1). It was not until after the 1900s that the use of statistics and probability became both a viable and desirable option. As a result, notions of normalcy and deviance became scientifically calculable concepts. And while these new laws of probability implicitly relied upon laws of nature, they were uniquely suited for calculating aspects of people—both their behaviors and their human nature.

In this sense, who and what was considered normal was (and continues to be) based upon certain socially and scientifically acceptable beliefs, often supported by statistical evidence that prior to the nineteenth century Western European scholars did not acknowledge as rational or useful. What is normal (or deviant) emerges not from some inherently

static, innate, or deterministic category of people, behaviors, or things, but rather, reflects specific practices and beliefs, culturally sanctioned as both scientific and necessary (Hacking 1990, 2002; Rose 1999; Foucault 1980). That some people, behaviors, and things come to embody particularly deviant or risky natures is one result of these practices. And while several prominent risk theorists suggest that risk has a universal, timeless quality for all groups of people (Beck 1995; Douglas 1992; Luhmann 1993), others argue that the practice of managing risk could not have become known if not for the advent of new ways of thinking that emerged during the nineteenth century (Hacking 1990, 2002).

CHALLENGES TO U.S. PUBLIC EDUCATION, 1880-1940

While the specific terminology of risk in education became popularized with the publication of passage of *A Nation at Risk* in 1983 (National Commission on Excellence), the underlying issues associated with the term and schooling have existed at least since the mid- to late nineteenth century in the United States. Since the late nineteenth century, school administrators and teachers have attempted to identify students who presented a challenge to the teaching and learning process. This was particularly the case in schools situated in urban contexts as these locations were faced with difficult working conditions, exacerbated by increasing enrollments from newly arriving immigrants from Europe, the passage of compulsory school attendance laws, and increasing numbers of students attending school with physical disabilities.

For example, during the late 1800s schools and educators began to challenge the common school notion that all students should, or were, capable of receiving the same education. Many educators at the time argued that such a policy, while good in an ideal sense, did not address the individual challenges posed by students who did not typify the ideal, or so-called normal student. These students were often characterized as overage, or too old for the particular academic and intellectual grade level in which they were placed or, in some cases, they possessed some perceived physical or mental disability that was believed to impede their overall intellectual ability to learn and function “normally” in the classroom. During this time, public school systems located in large,

densely populated urban areas such as New York City, begin to push for differentiated curriculum, signaling a move away from the ungraded school model.

Psychological and sociological literature during the early to mid-1900s in the United States were concerned with using methods of science to identify and categorize the problems faced by individuals living in an industrial, urban social context. There was growing concern about educating the children of immigrants (Richman 1906), with increasing attention paid to the children of recent African American migrants from the southern regions of the United States (Blascoer 1915). During the late nineteenth and early twentieth centuries there were two ways for explaining the intellectual capability of students positioned as “different,” and potentially deviant from the mainstream society. The first commonly suggested that students of African American heritage, as well as immigrants from southern and eastern European backgrounds were incapable of intellectual achievement because of innate, genetic deficiencies. By the 1920s, however, these explanations were under increasing attack for their seeming lack of empirical data. In their place emerged arguments that pointed to the important role played by environmental factors on the development of intellectual potential. It was believed that the challenges posed by poverty and urban life, rather than one’s genetic disposition, made it difficult for certain students to achieve intellectually and live a moral life.

Urban life, particularly for those living in poverty, was seen as uniquely maladaptive and problematic for the poor and their children. The desire to eliminate, or at least control, the negative influence these potentially deviant people might have on the larger society justified actions taken by researchers, social welfare agents, and school officials to better understand how to meet these students’ perceived exceptional needs. The work of philanthropic organizations, such as women’s clubs and settlement houses (Addams 1911; Rouse 1984), point to efforts made to ameliorate the effects of poverty, immigration, and other social conditions thought to impact both the intellectual and moral growth of certain children. Ultimately, these students were viewed as problems that made the task of the teacher, and ultimately the school and school district, more difficult. The creation and increasing popular use of intelligence testing provided a scientifically efficient

method for identifying and categorizing students on the basis of their presumed intellectual capability. This process would offer students the education needed to prepare them for their “proper” place in society.

CHALLENGES TO U.S. PUBLIC EDUCATION, 1941–1982

During the mid-1940s, and well into the 1960s, there was another wave of African American migration and Afro-Caribbean migration into large urban centers across the country. Simultaneously, immigrants from Spanish-speaking countries in the Caribbean and Mexico also moved into crowded urban enclaves. This increased migration to large cities, coupled with the flight of white Americans to the suburbs, led to a demise of jobs and resources within urban cities. The result was a high concentration of poor and working-class people, primarily black and Latino, within the largest U.S. cities. These conditions helped widen the increasing gap between poor people of color and their white counterparts along various social, economic, and academic indicators. To address these concerns the federal government assumed a more prominent role in addressing poverty and its effects on U.S. life through President Lyndon Johnson’s War on Poverty programs. One result, the *Elementary and Secondary Education Act of 1965*, ushered in a proliferation of educational research at the K–12 level that sought answers to why students of color, primarily African American, Mexican American, and Puerto Rican American, experienced lower academic achievement than their white counterparts across the United States. Simultaneously, researchers began to investigate what schools, teachers, and students needed in order to increase the academic performance of the poor and students of color in urban areas. While some authors recycled theories from the early twentieth century that presumed innate, genetic deficiencies accounted for these students’ lower academic achievement, such explanations were challenged by those who suggested the environment and cultural practices played a pivotal role in potential academic performance. Proponents of the latter view believed students in urban schools, as well as the families and communities of which they were a part, lacked the necessary skills, perspectives, and cultural understandings to successfully navigate within the world of school. This notion of cultural

deprivation assumed that differences in academic achievement between poor and/or students of color and their counterparts from white, middle-class backgrounds originated in the deficient family ecology of the former students, rather than inside their genetic code. Much of the work in this area focused on the cognitive and linguistic implications of parenting strategies used with children of color and/or those living in poverty.

Many researchers disagreed with these findings and pointed out that research rooted within cultural deprivation or deficit models tacitly accepted and utilized white middle-class skills, perspectives, and cultural understandings as the standard criteria for comparison. Critics of cultural deficit models suggested that the cause for low achievement among the poor and students of color was more likely a result of cultural differences that existed between the cultural values rooted in the school and those found in the child, the family, and the community in which the student lived. Proponents of this perspective argued that students in urban schools, as well as the families and communities in which they lived, came to school with distinct perspectives and beliefs about the world and education that often conflicted with the existing cultural values found within school, school personnel, school systems, and the larger socioeconomic and political system. These authors suggested that in order for student achievement to improve, schools must find ways to adapt to the perspectives and values of the student, rather than try to fit the student into the existing structure. This perspective focused on the inequitable practices of schools and school systems that lead many poor and/or students of color to experience low academic achievement and educational attainment. These highlighted the deficiencies of institutions and their practices, such as unequal school funding, inadequate teacher preparation, lack of multicultural curriculum and inclusive instructional strategies, and low teacher expectations for student learning.

CHALLENGES TO U.S. PUBLIC EDUCATION, 1983–PRESENT

The publication of *A Nation at Risk* in 1983 represented the next wave of federal attention focusing on the effectiveness of U.S. schools. This policy pointed to the impending dangers facing the United

States with regard to existing mediocre standards for academic achievement, and sought to renew the nation's commitment to K–12 and higher education. Unlike the *Elementary and Secondary Education Act of 1965*, *A Nation at Risk* did not specifically address concerns associated with educating students from disadvantaged backgrounds. However, policymakers, researchers, and educators picked up the language of risk, specifically as it evoked fears about the continuing strength and future economic vitality of the United States. Throughout the 1980s, federal policy and the education field shifted its focus from a nation at risk to one that viewed particular students as at-risk. While initially discussed in the field of psychiatry and developmental psychopathology during the 1970s and early 1980s, “at-risk” became the term of choice when discussing students who were believed more likely than their peers to experience low academic achievement and educational attainment. The underlying goal of this practice was to identify, at the level of the individual student, the origins and specific risk factors that made low academic achievement and educational attainment more likely to occur. In doing so, it was believed that school systems, teachers, psychologists, and other providers could provide the remediation and intervention necessary to assist these students. The research that had accumulated over the past four decades that examined the relationship between individual, familial, and social characteristics, and one's resultant achievement, IQ, and social competence, was used to identify the risk factors associated with low achievement. While there was (and continues to be) no definitive agreement on the risk factors that place a student at risk, G. Natriello, E. L. McDill, and A. M. Pallas (1990) identified the following most frequently cited and researched individual/family-level risk factors associated with the “atrisk” student: (1) poverty, (2) race/ethnicity, (3) limited English proficiency, (4) parents' educational attainment, and (5) single-parent family homes. This approach to understanding issues of risk followed an epidemiological perspective (Swadener 1995) that attempted to locate the causes and factors that ultimately lead to a pathological state. In the context of this literature, a student characterized as at-risk technically refers to a student who is part of a population of people who either have or have a high likelihood of coming into

contact with risk factors associated with the occurrence of some negative outcome.

However, throughout the mid-1980s and into the present, the term at-risk has taken on a life of its own, becoming a descriptor that generally represents students of color, those who are poor, disabled, or for whom English is a second language. These perspectives of risk, specifically as they relate to schooling have been criticized for their seeming adherence to culturally deficit models of thinking (Swadener 1995). It is argued that these risk perspectives were the result of longstanding social constructions that positioned students of color and their families, as well as those living in poverty, and those with particular kinds of special needs, as problematic, abnormal, and potentially deviant. Researchers interested in the socially constructed nature of risk as it plays out in school systems and classrooms have noted the flexible ways in which this notion is utilized and acted upon on students perceived as at risk for low academic achievement (Richardson et al. 1989).

By the 1990s, there were at least two emerging ways to discuss such students in relation to education and schooling. Both perspectives challenged the negative undertones associated with categorizing these students as at risk. One school of thought, situated within a social construction model, advocated the need to refer to these students as “at-promise,” or “placed at-risk,” rather than as simply “at-risk” (Swadener 1995; Boykin 2000). Such a move, these authors suggested, shifted the focus from students and families and placed responsibility on school systems in meeting the needs of students who faced challenging life circumstances. In the 2002 National Society for the Study of Education (NSSE) publication, *Educating At-Risk Students*, Deborah Land and Nettie Legters cite the following school-level factors associated with placing students at risk: (1) school-level poverty, (2) class size, (3) school size, (4) urbanicity, (5) expectations, (6) school violence, (7) tracking, (8) special education, (9) retention, and (10) suspensions and expulsions. Another school of thought, situated in a wellness model that emerged in the 1970s in the fields of psychopathology and developmental psychology, believed it more useful to examine why some students, in spite of their proximity to risk factors associated with low academic achievement and educational attainment, in fact, succeed academically. These resilient students, who ironically had always existed, became the models to

understand and emulate. Such work sought to identify the protective factors that buffer or, in some cases, ameliorate the effects of the negative risk factors these students faced in their lives, in the hope of creating effective intervention and prevention programs for students facing similar conditions. What is interesting about this discourse is the way that it seemingly moves beyond the idea of risk, while simultaneously relying upon the notion of risk to validate its claims. As such, the resilient student is always potentially “at-risk.”

EVOLVING TERMINOLOGY AND FUTURE CHALLENGES

Since the early history of public schooling, schools have faced the challenge of meeting the academic needs of all students. Students positioned as different or abnormal were typically the ones who found it difficult to navigate within school settings. Whether these students were characterized as such on the basis of their perceived immigrant status, physical or mental ability, class status, cultural, or racial background, these students were seen as threats to the nation’s economic vitality and moral standing. Throughout this history, however, educators have challenged these ideas, pointing to how normalization, or the sociocultural process by which particular people, beliefs, and ideas become positioned as correct, natural, and reasonable, informs who and what is considered normal. As demographic shifts continue to occur across urban, suburban, and rural school contexts in the United States, it is not likely that issues related to presumed academic risk (no matter how cleverly disguised in new terminology) will disappear in the years to come.

Keffrelyn D. Brown

MULTICULTURAL EDUCATION AND ITS TYPOLOGIES

Since its inception, public education in the United States has been focused on creating a kind of common culture among its citizens, a culture that will allow its democratic ideals to thrive. Although it was

not always called multicultural education (this term was coined in the 1960s), competing ideas about whose values, history, and culture were to be transmitted and promoted through public schooling have always lain at the heart of educational debates in the United States.

At the turn of the twentieth century, the Commission on the Reorganization of Secondary Education published its *Cardinal Principles of Secondary Education* (1918), which responded to the influx of Irish and eastern European immigrants by creating a comprehensive high school that offered a curriculum of “health, command of fundamental processes, worthy home membership, vocation, civic education, worthy use of leisure, and ethical character as the seven ‘main objectives’ of American secondary education” (Cremin 1964, 93). The *Cardinal Principles* sought to change the habits and ways of thinking of recent immigrants in order to prepare them for full participation in the dominant U.S. culture. Underlying the principles was the notion that the dominant U.S. culture was the desirable and proper one, and that the cultures represented by immigrants (Irish culture, Catholicism, Judaism, etc.) were not beneficial either to the immigrants themselves or to the larger society in general. The principles’ seven main objectives heralded a century of debate about whether schools should respect and include knowledge of cultures other than the status quo. This debate, which centers on whether or not we should build an egalitarian, democratic society by assimilating “outsiders” into the mainstream or whether we should respect and include all people in our public institutions, especially schools, forms the basis for ways of thinking about multiculturalism in education.

Multicultural Education (MCE), as it is called today, began as a response to the demands of the civil rights movement, the consequent dissolution of neighborhood schools due to desegregation, and the continued debates from the turn of the century over what should and should not be taught in schools. The first definitions of MCE focused on restructuring schools to better serve the needs of children of color and poor children. Underscoring these definitions was a range of philosophies of how best to achieve the goals of a democratic society; these included assimilation of minority groups into the mainstream, liberal pluralism in which mutual tolerance was the goal, and radical reformations of the ways in which schools function. As teachers and teacher educators tried to make sense

of multicultural education and created new programs, the paradigm took on an elongated shape that stretched from very limited reform efforts to detailed overhauls of systematic structures and perceptions of students, teachers, and communities.

Initial reforms centered on creating curriculum that was more inclusive and represented varying cultural viewpoints. The ethnic studies movement demanded that school curriculum reflect the “perspectives, struggles, dreams, and realities” of people marginalized in U.S. society: African Americans, Latinos, women, and people with disabilities (Banks 1996, 40). Ethnic studies was the first phase of multiculturalism; however, educators involved in this phase soon realized that interrupting the cultural status quo of public school curricula was not enough to bring about restructuring of schools in order to assure educational equity for all students. How schools could offer an equal and equitable education to all students and how they could produce a critical citizenry informed these questions: What did multicultural education really mean? What did it look like in practice? In order to answer these questions, educators developed programs, curriculum reforms, and theoretical rationales to guide the development of multicultural education. As multiculturalism developed in many different sites and from varying political perspectives, its meaning and practice became contested and, at times, even vague.

TYPOLOGIES: MAPPING THE TERRAIN OF MULTICULTURAL EDUCATION

Given the broad range of programs and approaches that researchers were documenting, the construction of typologies emerged to explain and describe the field. The primary purpose of early typologies was to spell out the assumptions of multicultural education. In the next phase of theorizing about MCE, authors created typologies to critique education that proclaimed itself multicultural, but was not delivering the desired results of equity and cultural critique. The most recent typologies map out how various political camps have used the ideas of multiculturalism to promote their own kinds of educational reforms, and to challenge the ideological nature and uses of MCE. Typologies have remained useful in MCE because they provide both an overview of the field and a detailed qualitative scale to describe

modifications. They give form to the continued debates over equity and access for all students that spurred the creation of MCE.

Researchers frequently refer to the following five typologies of multicultural education: monoculturalism, individualism and understanding, cultures in isolation/group power, universalism, and emancipatory. Considering the thirty-year time period during which these typologies were constructed, they also provide a historical view of changes in the field of MCE. While there are other typologies that have been created, these five deal specifically with issues of teaching and learning in K–12 classrooms (See Table 10.1).

DEFINITION OF TYPOLOGY

Multicultural Education typologies are defined as systems of categories that classify both documented and ideal approaches to learning, teaching, interacting, and serving in equal and equitable environments. Although education research has been utilized to create the typologies, the five under discussion here do not include reviews of research in the field of MCE; they only include programmatic initiatives. The venues for initiatives are most likely to be K–12 classrooms; however, higher education programs, businesses and corporations, and government offices have also implemented different levels of multicultural education in order to better serve their constituents.

Because debates concerning the merits and necessity of multicultural education reach beyond the K–12 classroom and university schools of education into public conversations about cultural sensitivity and tolerance, it is essential that the broad impact of multicultural education on society be taken into account. Multicultural education, born of the civil rights movement, cannot be separated from society's greater struggles to understand and embrace the multiplicity of cultures and peoples that make up the citizenry of the United States. This is why these conversations continue to extend beyond the K–12 classroom. This review of the typologies and the purposes they serve demonstrates the applicability of the levels to various types of programs.

PURPOSES OF MCE TYPOLOGIES

The multicultural education typology's primary purpose has been to provide conceptual clarity to the

field of multicultural education. This purpose stems from the fact that various scholars over the past thirty years have envisioned MCE in a myriad of ways. As the field of education continues to change, the typologies have also changed. The changes in the field made it necessary for the typologies to expand from a primary focus on race, gender, and ethnicity to include areas such as students with physical or mental exceptionalities, issues of sexual orientation, language difference, and a greater emphasis on social class.

There are several other benefits to the construction of MCE relating to the overall desire to help scholars and students better understand the gamut of approaches that may be considered in designing and implementing multicultural education. Typologies provide:

- scholars with a language for debate and critique in academic arenas
- students and scholars with a means to grasp the concepts of MCE in both a pedagogical and historical format
- an introduction to preservice and inservice students who are not familiar with the field of MCE
- a synthesis of the existing concepts and research in the field of MCE
- a qualitative measure for teachers to use when they reflect on their practice
- a qualitative measure for researchers to describe and critique what occurs within classrooms

As seen in Table 10.1, each typology begins with the lowest level of multicultural education. In some cases, this level is defined by the dearth of curricular reforms focused on meeting the needs of all students. The primary level is often a description of a traditional approach to education with its focus on Eurocentric content, limited attention to diverse children's communities or family backgrounds as a source of strength, and rigidly aligned structures that leave little room for students and their parents to actively participate in the learning environment.

Each consequent level of the typology shows a change in the way that the classroom teacher and school administration view their students, their backgrounds, and their contributions to the school. The levels may function as autonomous stations in which teachers view their practice, or they may describe stages of development in which teachers and schools

Table 10.1

Typologies of Multicultural Education

	Monoculturalism	Individualism and Understanding	Cultures in Isolation/ Group Power	Universalism	Emancipatory
M. Gibson 1976	Education for the culturally different or benevolent multiculturalism	Education about cultural differences or cultural understanding	Education for cultural pluralism	Bicultural education	Multicultural education as the normal human experience
R. Pratte 1983	Restricted multicultural education		Modified restricted multicultural education	Unrestricted multicultural education	Unrestricted modified multicultural education
C.A. Grant and C.E. Sleeter 1986	Teaching the exceptional and the culturally different	Human relations	Single-group studies	Multicultural education	Education that is multicultural and social reconstructionist
S. Nieto 1992	Monocultural	Tolerance	Acceptance	Respect	Affirmation/ solidarity/ critique
C. McCarthy 1993	—	Cultural understanding	Liberal MCE	Cultural emancipatory	Critical emancipatory
P. McLaren 1994	—	Conservative	Liberal	Left-liberal	Critical and resistance MCE
J. Banks 1995	—	Contributions approach	Additive approach	Transformative approach	Political Action

seek to move through the levels and attain the ideals of multicultural education. The transitional stages focus on various aspects of teaching and administrative responsibilities. These levels often describe classroom practices, and they may see the individual teacher as responsible for creating and implementing changes to the curriculum. Changes generally include racially and ethnically diverse content and materials, attention to gender bias, structured activities that bring the students' families and communities into the classroom, discussions of equity and equality in the literature, and the maintenance of high expectations for all students.

The authors of these five typologies use them to critique assimilation and pluralism. They focus on the devaluing of cultures and races different from that of the mainstream, i.e., white, middle-class population of students. Teaching from an assimilationist perspective also places greater value on Eurocentric norms, values, knowledge, and achievements. The authors generally use their lower levels to investigate the conception that education is a tool to make students conform to particular definitions of academic achievement, proper behavior, and speech.

Conversely, these authors also challenge the belief that various racial groups should be tolerated, celebrated, or function in isolation from each other. These typologies describe the struggle of how best to represent various aspects of groups of people without stereotyping them or placing limits on a group's identity. According to the authors, pluralism does not allow for the individual student to function both within and outside of their group membership. Further, pluralism also depicts culture as essentially stable, instead of as a constantly changing social force.

The stages culminate in a proposed ideal, a final level of multicultural education. Although all of the typologies were constructed before Carl A. Grant and Gloria Ladson-Billing's (1997) comprehensive definition of multicultural education, this definition can be used as a template for discerning the multiple components necessary for schools to meet the ideal levels of MCE found in each typology.

The final level is rarely attainable in public schools because it requires programmatic, structural, and institutional reforms that are difficult for public institutions to implement in isolation from greater changes in the state. This is not to claim that educa-

tors have not built such programs in the United States, just that there is scarce documentation of them. While the authors of the various typologies provide criticism on the lower levels of their typologies, they do not critique their ideal levels. Instead, the final level of the typology stands as a call to action, or a template to which educators should aspire.

PAST AND PRESENT TYPOLOGIES OF MULTICULTURAL EDUCATION

In the following section, a brief overview of each of the five typologies is given. The full typologies and the authors' reasoning behind each of them can be found in the articles listed in the reference section. The names of each stage are detailed in Table 10.1. These groupings are not rigid, finite categories; indeed, within each typology the levels intersect and overlap. Therefore, the chart serves only as a visual representation and point of reference.

Margaret Gibson constructed the first typology in 1976. Gibson created it based on her review of empirical research and scholarly works published by the American Association of Colleges of Teacher Education (AACTE) and the Educational Resource Information Center (ERIC) of the U.S. Office of Education. She constructed the typology to reflect the values, strategies, outcomes, and target populations of each of the levels. She acknowledges that each of her first four levels has limitations concerning deficit perceptions of children of color and their communities, tensions between pluralism and assimilation, and the differences between tolerance and understanding. In each of her levels, Gibson connects the history of multicultural education, its various constituents, and the assumed political outcomes of the education she describes. Gibson's purpose in constructing her matrix was to show the progress that had been made in MCE while lighting the way to future goals. Specifically, she highlighted the benevolent nature of current practices, but that education for the culturally different still maintained the status quo. She was interested in developing approaches that saw multicultural education as the *normal* human experience, instead of an education that viewed one culture as more valuable than another. An interesting note is that Gibson was one of the first authors to discuss bilingualism as a component of multiculturalism.

R. Pratte (1983) gives a succinct overview of multicultural education through his four levels. Unlike Gibson's levels that begin with monoculturalism, Pratte argues for a limited mix between monoculturalism, individualism, and understanding. This is perhaps because, by 1983, it could be assumed that given the powerful push towards MCE in the 1970s, the majority of classrooms had undergone some changes, however limited in scope. Pratte's typology deals with both the elements of classroom practice and the provisions for school services, such as meals and extra-curricular activity planning, for all students. The fundamental difference between Pratte and all of the other authors is that he uses the approach of pure logic to argue for educational changes. This is not evident in other work because the language of formal logic is itself rooted in Western canonical traditions, which multiculturalism is seeking to disrupt. Pratte's language is not couched in the language of civil rights and educational equity, although he argues for these nonetheless.

C. A. Grant and C. E. Sleeter (1986) primarily focus on the teacher's responsibility for MCE in pre-K–12 classrooms until the fifth and final level in their typology. The final level calls for a comprehensive restructuring of curriculum and services to meet the needs of all students. The initial Grant and Sleeter typology gave attention to issues of gender and social class that had not been examined previously. This typology has been revised several times to reflect the inclusion of new forms of difference and bias such as disability, sexual orientation, and religion. Grant and Sleeter are interested in synthesizing current practices and placing them on a continuum. The use of a continuum recognizes the importance of individual teachers' practices while still underscoring that those individual teachers can only take MCE to a certain point. These authors are therefore concerned with balancing the responsibility of teachers with the responsibility of the greater society in making the United States live up to its democratic ideals. In addition, the continuum can be used as a vision statement to guide institutional and instructional reforms.

C. McCarthy (1993) moves the typology from a focus on classroom interaction to the types of discourse, or language, surrounding the teaching and promotion of multicultural education in K–12 classrooms. He addresses issues of representation found in language used to discuss educational equity and

access. His four levels describe the differing ideologies as to what it means to be an educated citizen in the United States. McCarthy's neo-Marxist and post-colonial perspectives are apparent in his discussion of subordinate and dominant groups and the United States' links to global capitalism. McCarthy's categories ask us to critically reflect on the political uses, in the public domain, of the language and ideas of multiculturalism. This author sees enhanced freedom in cultural critique, which he both uses and espouses.

Similarly, P. McLaren (1994) uses the political language of Marxism to describe the four levels in his typology. His typology focuses on public conversations about social and educational opportunities for United States citizens. He asserts that each form of multiculturalism has a political agenda and that his final level, critical and resistance multiculturalism, must use both public and private venues to contest and critique societal norms that maintain the status quo. McLaren asks educators to constantly rethink, from their positions of power, the effects of their allegiances and practices. His purpose is, in part, to disrupt the status quo by standing *with* those people who have been oppressed by institutions, including schools.

By contrast, J. Banks (1995) provides a typology for multicultural curricular reform that speaks to political action only in the final approach. Banks, however, has constructed his typology within his discussion of the large political and ideological histories of the multicultural education paradigm. He identifies dimensions of MCE that encompass the rich conversations, debates, and actions surrounding the movement, as well as levels of multicultural behavioral competencies within the classroom. Banks' typology can be used as a historical guide through the development of the ideas that construct MCE. Banks, unlike Grant and Sleeter, McCarthy, and McLaren, is not as intent on providing a course of action for multicultural educators as he is on providing a thorough view of the social and historical terrain that produced MCE.

S. Nieto (1992), too, had proposed a more complex design for a multicultural education typology. Her typology is a matrix that identifies characteristics of multicultural education and the levels at which teachers practice them. Both the characteristics and the levels escalate to ideal forms of institutional change to achieve social justice. Interestingly

enough, both Banks and Nieto include student outcomes in their typologies. They provide examples of what the students and teachers should be doing at each stage. In Nieto's case, this is because she uses her typology to inform teacher education in particular. Teachers and teacher educators can use her typology in similar ways that they might use Grant and Sleeter's: to design and implement changes in schools. Lastly, like Grant and Sleeter's work, Nieto's moves along a developmental model, building toward the future ideal.

It is clear that the authors of these typologies, although highlighting various aspects of multicultural education (discourse, content, history, and schooling structures, for example) all use the form of the typology to argue for a kind of multicultural education that realizes the hopes of a democratic and equitable society. Some typologies describe current practices (Gibson), others offer a model along which practitioners can move their practice (Grant and Sleeter, Nieto), while others question the underlying ideologies of multiculturalism itself (McLaren, McCarthy). Since the civil rights movement, the history of education in the United States continues to underscore the belief that public education is one of the primary foundations in realizing the full potential of a just society. Multiculturalism remains, philosophically and in practice, the impetus to achieve this goal.

Thandeka K. Chapman and Nikola Hobbel

DISABILITY STUDIES IN EDUCATION

For most of the history of American education, disabled students were excluded from public schooling. During the early to mid-1800s, some deaf, blind, and "feebleminded" children and adolescents were schooled in large public institutions that segregated them from mainstream society. Many other disabled young people simply remained at home, receiving no formal education at all.

When the urban public schools of the 1920s and 1930s finally did begin to make provision for disabled students, the field of American special educa-

tion was born. Yet it grew on shaky and slanted ground. From the start, school-based disability was a complex, stigmatizing marker of social identity that mingled together varied dimensions of social identity—race/ethnicity, social class, nationality, and gender. From the very beginning, special education programs were disproportionately filled with immigrant and ethnic-minority boys from working-class homes. The threefold assumption at the birth of American special education was that (1) some students were essentially subnormal, (2) professionals and specialists could use psychological tests and clinical judgment to accurately identify the subnormal students, and (3) the proper place for the education of these students was in segregated classrooms and schools (Chapman 1988; Lazerson 1983).

In 1975, the *Education for All Handicapped Children Act* created a federal mandate that all disabled children and adolescents must be provided a free and appropriate public education. Two distinct historical traditions came together in that Act. The legislation itself was a direct result of the civil rights movement, the 1960s and 1970s struggles for social equality for African Americans, women, and other oppressed groups. Part of that broader struggle was the beginning of the disability rights movement, an identity-based effort on the part of disabled Americans to protest their devaluation and isolation, to claim basic rights such as employment, housing, transportation, and dignity (Scotch 1984). In a profound new way, disabled Americans came together in their own organizations—often called Centers for Independent Living—to reject roles of tragedy, subservience, dependency, and invisibility in favor of the development of a disabled community based on pride, self-reliance, hope, and action (Shapiro 1983).

The second tradition that prospered under the new federal law was the professionalization of disability that had originated in the early special education programs of the Progressive Era (Lazerson 1983). This tradition was heavily steeped in the scientific authority of medicine and psychology (Danforth 1997). Disability was equated with disease, captured in professional concepts of diagnosis, treatment, rehabilitation, and cure (Rioux 1994). Special educators and psychologists relied on systems of intellectual and physical measurement that landscaped humanity across a bell curve, ranking all students on hierarchical frameworks of normality and subnormality, acceptability, and deficiency (Chapman 1988; Gould

1981). Viewed through the objectifying gaze of non-disabled professionals, disability was not about exclusion, oppression, identity, or community. It was about biophysical and social abnormality requiring diagnosis and modification. The professional goal was the normalization of the abnormal.

Over the past thirty years, the education of disabled students in America has remained caught within the tension of these two traditions, between the political concept of an oppressed minority group struggling for human rights and inclusion and a professionalized status as deficient unfortunates requiring treatment and segregation. This tension has been demonstrated in the extended struggle over the inclusion of disabled students in general education programs. Since 1986, when Madeleine Will, Assistant Secretary for the Office of Special Education and Rehabilitation Services in the U.S. Department of Education, issued a challenge to educate students with identified impairments in general education classrooms, educators have battled over the value of the idea that all students should be educated together (e.g., Biklen 1992; Kauffman and Hallahan 1995).

DISABILITY STUDIES IN EDUCATION

Disability Studies in Education rejects the professionalization of disability and the medicalized “personal tragedy model” of disability produced by educational and psychological professionals. It re-engages the purposes and practices of the disability rights movement by espousing a “social model” of disability, an understanding that places primary emphasis on changing the attitudinal and physical features of society so that disabled persons are fully valued, included, employed, and supported. It seeks full citizenship for disabled students within schools and other social organizations, framing the struggle as a project of dramatic social reform rather than an issue of individual modification and conformity (Gartner and Lipsky 1987; Kliever 1998).

Disability Studies in Education is an outgrowth and extension of a larger interdisciplinary tradition of scholarship called Disability Studies. The mainstay of Disability Studies has been a social model of disability that often separates the concept of impairment from the social and political act of disablement. An individual may have an accredited impairment, a biological anomaly or idiosyncrasy that impacts how

that person moves, thinks, or operates within the world. The social model holds that what disables individuals is not an impairment per se but the social and environmental barriers that oppress, constrain, isolate, and stigmatize that individual. These barriers include aspects of the built environment such as doorways too narrow for wheelchair passage and buildings without elevators. These barriers include the complex social habits of the cultural environment, the often taken-for-granted attitudes and beliefs about the value and proper place of the disabled person. This includes a general disposition that has been described as ableist, a deep unconscious presumption on the part of nondisabled persons that disabled persons are frightening, ugly, asexual, pitiful, dependent, or invisible. By highlighting the oppressive character of social and political barriers rather than the functional limitations or medical deficiencies of the individual, the social model frames practical action within a political movement seeking rights, equality, and justice (Albrecht, Seelman, and Bury 2001; Barnes, Mercer, and Shakespeare 1991; Barnes, Oliver, and Barton 2002; Davis, 1997).

There are two fairly distinct strands of Disability Studies scholarship that have developed since the 1960s, the United Kingdom version based primarily in a critical sociology of disability and the American humanities version exploring the cultural construction of disability through historical, sociological, and literary scholarship. Each should be viewed as an intellectual project operating in alliance with the grassroots activism of the disability rights movement (USA) or disabled people's movement (UK). Also, each has been deeply influenced by feminist accounts of disability that focus on the experiential standpoint of the disabled person and cultural politics of the body.

In the United Kingdom, the primary strand of Disability Studies scholarship has distilled a historical materialist account of disability. Drawing heavily from Neo-Marxism and Critical Theory, this approach has examined how common constructions of disability as a social problem and personal tragedy are expressions of the Western capitalist economic system. The historical rise of capitalism, and the particular industrial and technological modes of production that have dominated the Western world, have produced an ideology that defines ability/disability within hierarchical, individualized values of efficiency

and market-based competition. Simultaneously, disability has been captured, within institutions of social control and the institutional professions (medicine, psychology), as a social problem that pathologizes and depoliticizes human variation. Within this theory, the oppression of the disabled is a striking demonstration of the political and human implications of a deeply flawed capitalism (Finkelstein 1980; Oliver 1990).

Disability Studies in America has primarily developed a thorough critique of the cultural construction of disability. Historical researchers and literary scholars have led the way in explicating the devaluing and stereotyping cultural images of disabled people within the communications media, the arts, the law, public policy, and other prominent public discourses. Studies have explored the way that historical and contemporary cultural forms and social relations have created and maintained a marginalized status for the disabled. Recent poststructuralist scholarship has focused on the way that representations of the disabled body (and mind) created a hegemony of the normal, an aesthetic and relational ranking scheme that presses disabled persons to the social and economic margins (Davis 1995; Longmore and Umansky 2001; Thomson 1997).

The social model within the United Kingdom and the United States has been challenged and deepened by feminist accounts of disability that spotlight the subjective experience of disability while depicting the human body as a site of political contestation (Morris 1991, 1992; Wendell 1996). These studies critique the social model's usual emphasis on external structures and processes by promoting the experience of disability as a valid source of knowledge and voice within academic research. The general claim is that disabled persons, through the act of living with disability, have privileged access to knowledge about disability. The valuing of an experience-based perspective challenges academic research that often highlights the social processes and political structures that create and maintain social injustice without fully considering the individual interpretations and sensibilities of disabled persons. This challenge has led many disability researchers to develop forms of social inquiry involving close collaborations with disabled persons and the disabled community.

Additionally, feminist studies have examined the social intersection of disability and gender, explor-

ing how the political and cultural meanings projected onto the female body coincide and collude with social representations of the disabled body. The twin oppressions of gender and disability place disabled women in precarious social and economic positions. One goal of feminist research has been to reclaim the body and femininity within a recalibrated scale of value and dignity, pressing for social change and individual esteem in the same identity-based movement (Morris 1991; Morris 1992; Wendell 1996).

Current research in Disability Studies in Education explores the intersections and interplays of disability and gender, race, ethnicity, social class, religion, and sexual orientation in education and teacher education (Brantlinger 2001; Erevelles 2000). Disability is used as a point of entrance into a complex social landscape where numerous group oppressions overlap and the boundaries of numerous social identities often blur. In this sense, Disability Studies in Education is one brand of a host of current strands of critical cultural analyses, often working in alliance with educational subfields such as Multicultural Education, Feminist Studies, Critical Theory/Marxist Studies, and Postmodern Thought.

Within the professional terrain of educational research, Disability Studies in Education serves as a critical counterweight to standard special education constructions of disability, simultaneously critiquing the narrow, diagnosis-and-treatment focus of special education research while expanding disability and schooling scholarship in important new directions. A prolonged and concerted effort has been made to contest the dominant authority of the special education knowledge base that continues to produce the medicalized, personal tragedy account of disability in schools. Working from many philosophical directions, educational theorists have critiqued the hardened circle of positivist disability science that often reduces the voices of disabled students and their families to side chatter beneath the power of the professional account (Heshusius 1982, 1988, 1989; Iano 1986, 1987; Poplin 1987, 1988; Skrtic 1986, 1991).

A simultaneous effort has been made to forcefully articulate and advocate for inclusive education as democratic reform of school and classroom settings, shifting the discourse on inclusion from antiquated goals of normalizing abnormal students toward con-

formity to a social movement to create school environments supporting and valuing all academic citizens. This effort has framed inclusion in general classrooms and buildings as a human right rather than something to be earned through skill development or ability conformity (Ferguson 1995; Gartner and Lipsky 1987; Kliwer 1998; Taylor 1988).

Closely linked to the pro-inclusion literature are explorations of social and political links between the various groups of students that have traditionally experienced exclusion and discrimination within the public schools. This research has focused on the attitudes, political structures, and social practices that have often allocated lesser status and educational provision to students of African American, Latin American, and lower social class backgrounds. Researchers have attempted to unearth the deep and complex relationships between race, social class, and disability within American schools, pressing past the mere acknowledgement that African Americans, Latinos, and working class or poor youth are disproportionately represented in special education programs to examine the historical and sociological roots of political oppression within the schools (Brantlinger 2001; Ferri and Connor, in press; Losen and Orfield 2002).

Supported by the exploration of the segregating and dehumanizing forces within society and schools, advocacy for inclusive education has taken on international dimensions as investigations of inclusion and exclusion have grown around the world. The inclusive schools movement, varying in form and strength across nations and cultures, has become an international phenomenon (Ballard 1999; Booth and Ainscow 1998). Increasingly, researchers are exploring social meanings and policies of disability across cultures, helping bring about a deeper understanding of disability issues around the world while decentering the dominant Western discourse on disability with alternative cultural constructions (Peters and Chimedza 2000). The future of Disability Studies in Education lies in the continuing expansion and deepening of critical cultural analyses to better comprehend and challenge the social, political, and economic barriers to the achievement of inclusion, freedom, and equality of disabled children and adults.

Scot Danforth

FEMINISM AND CROSS CULTURAL FEMINIST ISSUES IN EDUCATION

There has always been “the woman question” in U.S. society. With the dawning of liberty with the abolition of U.S. chattel slavery in the late 1800s, the question of citizenship, and who could be a citizen (with the full rights thereof) became one that fell under considerable scrutiny and debate. As the franchise was being considered for newly emancipated slaves, white women also began to agitate for a voice in the governance of the young nation.

WOMEN’S STUDIES AND WAVES OF FEMINISM

Historically, the activism and examination of issues and events that affect women has been called feminism. The broad field of Women’s Studies, the history of women’s activism, has been conceptualized as happening in three stages: the First Wave, beginning in the late 1800s and ending with the ratification of the nineteenth Amendment to the United States Constitution; the Second Wave, beginning with the “radicalism” of the 1960s and the persistent agitation during the 1970s on behalf of diverse communities of women for rights and opportunities; and, the Third Wave dawning in the late 1980s. It is important to note that these dates are not fixed and easily ratified given that events, people, and ideas are often overlapping. Each “wave” of feminist thought and activism certainly has been appreciably informed and influenced by the period preceding it. Concomitantly, it is conceivable that each wave, in the minds of many, both within and outside of the field, may begin and end in significantly overlapping fashion.

This agitation for rights and opportunities was waged on many fronts. Equal access to education, employment, pay, and equal protection under the law were among the myriad issues that marked the activism of U.S. feminism’s first and second waves. Although all of the issues taken up by first and second wave feminists appear to be universal women’s issues their impact on individual and diverse communities of women varied considerably. The women’s movement and U.S. feminism have been routinely accused of focusing too narrowly on how these is-

ues affect and pertain specifically to middle-class white women.

Women of color argue that race, social class, sexual orientation, and native language all impact these issues in divergent and quite often interlocking ways. Hence, feminists of color have argued that all oppression is not equal.

Much of the early scholarship by First Wave feminists that explored “the Woman’s question” tended to examine women’s intellectual capacity, as it was a commonly held belief, specifically among men, that women, regardless of race, were different from and cognitively less capable than men. Compounding the supposed innate physical and mental differences among men and women was the issue of race. The commonly held belief about black people was that they were innately physically stronger (than whites) and thus “built” for strenuous, manual work. The stereotype that persistently and historically has plagued black women was about their supposed hypersexuality. That is, black women and girls were quite often described as oversexed and promiscuous. They were rarely described as intelligent. Furthermore, terms that denoted the popularly held characterization of womanhood, femininity, ladylike, or even motherly were typically applied to white women. A number of black women spoke out on the inequities of these issues of intellectual ability, promiscuity, motherhood, womanhood, and equal protection under the law between white women and black women. Quite often laws that protected the chastity and overall well being of white women were not applied to black women.

In the field of education, early scholarship tended to critique the differing academic programs of study proscribed for girls and women as compared to that of boys and men. Where boys and men were generally allowed to take a “classical” course of study that included study in Greek, Latin, and French, as well as literature, mathematics, and science, women were consigned to a curriculum that primarily focused on what could be thought of as the “domestic arts.” This domestic arts curriculum differed quite significantly for white and black women and to a certain extent poor, Eastern European immigrants versus middle-class, Anglo Saxon white women. In large part, Eastern European immigrants and black women’s courses of study were comprised primarily of domestic skills, i.e., food preparation, ironing, washing, cleaning, and

so on. For middle-class, Anglo Saxon white women, domestic arts were coupled with a modified classical course of study. The expectation was that an educated middle-class white woman would not go on to advance her studies in a university, but rather be content with managing her husband's household.

Second Wave feminism was part and parcel of a larger movement of change in U.S. society. The Civil Rights Act of 1964 (CRA), which essentially ended de jure racial segregation and oppression, opened the door for other marginalized groups. Among those who were able to successfully add their concerns under the umbrella of the CRA were white women (and other people of color, namely Latinos, Native Americans, and Asian Americans), lesbian, gay, bisexual, and transgender (LGBT) people, as well as the physically and mentally disabled. Given that prior to the CRA, race was more salient in the oppression of most African Americans, the inclusion of gender under the umbrella of the CRA did not necessarily provide added protection for black women that was not already afforded them under protections for race. For example, in order for African American women to seek legal recourse for racial or sexual discrimination, they must first prove that either black men or white women have faced similar discrimination. That is, black women are not part of a protected class separate from either black men or white women. However, the same burden is not held true for black men or white women who seek legal recourse for racial or sexual discrimination (see for example, Kimberlé Crenshaw 1995; Deborah King 1988/1995; Patricia J. Williams 1997; Adrien K. Wing 1997). That is, courts have not allowed black women to argue that they have been discriminated against *because* they are black *and* a woman. Moreover, given that blacks had been granted suffrage with the passage of the Fifteenth Amendment and that women had the right to vote with the ratification of the Nineteenth Amendment, it would seem that black women, were covered by both race *and* gender with respect to the franchise. However, closer examination of both of these issues underscores the precarious position for black women with respect to the right to vote. Under the Fifteenth Amendment, "blacks" had the right to vote, but "women" did not. Would black women, who wanted to exercise their right to vote, be allowed

to vote as "blacks," or denied because they were "women?" Similarly, after 1919, when women were granted the right to vote under the Nineteenth Amendment, was that concession necessarily applicable to black women given that "blacks" had been granted the right to vote nearly fifty years before? It is important to note that prominent white women suffragists opposed the ratification of the Fifteenth Amendment because "women" were not included. Hence, although black women theoretically had the franchise with the passing of both the fifteenth and nineteenth amendments, given their status as *both* "women" and "black," their rights in general and, in this example, their right to vote was not as clear cut as it was for black men and white women.

Educational research that coincided with the Second Wave tended to fall in two camps: liberal feminists and radical feminists. Liberal feminist research generally focused on addressing gender inequality through professional development to raise teachers' awareness of gender discrepancies in pedagogical strategies and curricular options. They also tried to address gender discrimination vis-à-vis school policy and through legislation.

Radical feminist research examined how issues of patriarchy constrain and limit opportunities for women. Radical feminist scholarship called for solutions that sought to address societal norms and belief related to dualisms like power and patriarchy and femininity and masculinity. In addition, radical feminists also sought to address reproductive rights and sexual violence. Moreover, radical feminists looked overall at how the structure of society constrained and limited women's lives. Thus, radical feminist educational scholarship examined the ways that sexual inequality manifested in schooling practices and policies (see, for example, Weiler 1988). Much of this research looked at the social context of schooling that made curricular options and opportunities unavailable to girls. Similarly, some research examined feminist pedagogical practices.

Third Wave feminism, also called "postfeminism" or "neofeminism" has been described as a reaction to the first two waves of feminist theory and activism. Third Wave, or postfeminism has been linked to postmodern theory to the extent that it questions taken-for-granted categories, of equality, privilege, and oppression, and recognizes that these

notions are contextualized and operate quite differently given one's background (i.e., that race, class, and sexual orientation might mediate these issues either to one's advantage or disadvantage). Post-feminists examine patriarchy, critically uncovering the ways that both men and women participate and are oppressed within it.

Within educational research, post- or Third Wave feminist scholars have attempted to make the research process more transparent by addressing issues of objectivity, knowledge, truth, and so on, and exploring the ways that context and positionality shape what we know. Research studies would be qualitative in nature with small sample sizes. For most of this research, the point was not to obtain generalizable results so that strategies could be replicated en masse. Rather, the point was to demonstrate the complexities and nuances of multiple identities, while providing social critique on issues often mediated by race, class, gender, sexual orientation, and other such categories or qualifiers.

It is important to note that feminists of color have attempted to broaden the perspectives on gender and sexual inequality by calling for an examination of context. That is, they have argued that socioeconomic class, marital status, motherhood, race, ethnicity, and native language are contextual and thus mediate the ways in which gender or sexual inequality manifest. In this way, while many women scholars of color have certainly lived and written during the first, second and third waves of feminism, they have not generally been widely recognized as contributing to the first and third waves. A number of Black feminist scholars examined the social construction of gender identity and called for a feminist analysis that takes into account the multiple and complex nature of identity. In this way, we can consider feminists of color as historically and actively participating in all three waves of feminist scholarship and activism.

BLACK FEMINIST THOUGHT

Deborah King (1988/1995), Patricia Hill Collins (1990/2000), Kimberle Crenshaw (1995), and a host of other black feminist scholars have written specifically about the way in which race, class, and gender intersect to shape black women's lives. They further argue that these seemingly competing identities have

quite often worked in concert to oppress and marginalize black women. Thus, the experiences for women of color go beyond the idea that they are simply a person of color plus gender, or a white woman plus skin tone, but that the intersectionality of race, class, gender, ableism, and sexuality speak to the ways in which white male patriarchy, racial oppression, and homophobia work against women of color (Collins 2000 [1990]). A. K. Wing (1997) suggests that black women—regardless of socioeconomic class, sexual orientation, marital status, educational background, and so on—think of themselves, or let others think of them, as the sum of separate parts that can be added together or subtracted from. Rather, she argues that the “layered experience is multiplicative.” Furthermore, Black feminist scholars have begun to uncover how black women have used the marginalized spaces of race, class, and gender as places in which to work toward the liberation of not only themselves, but also *all* black people (Hine 1990, 1998; hooks 1995; Hunter 1997; White, 1999).

Sociologist Patricia Hill Collins (1990/2000) suggests that we can understand Black feminist thought as the nexus of biological classification, the social construction of race and gender, the material conditions accompanying these social constructions and black women's consciousness (p. 22). Further, she suggests that in order to address what she calls the “definitional tensions” of Black feminist thought, it is necessary to first specify the relationship between black women's standpoint and black feminist thought. She describes black women's standpoint as the experiences and ideas shared by African American women that can provide a “unique angle of vision on self, community, and society—and theories that interpret these experiences” (p. 22). Black feminist thought then, “encompasses [the] theoretical interpretations of Black women's reality by those who live it” (p. 22).

In educational research, this examination of Black feminist thought has looked at black women teachers' pedagogical practices and beliefs (Beaubeouf-Lafontant 1997, 2002; Dixson 2003; Foster 1993). Black feminist scholars in education have also sought to explore issues related to subjectivity and positionality when researching black women (Etter-Lewis 1993). Others have examined the ways that Afrocentric feminist epistemology informs the research process (Ladson-Billings 1994). In this way, Black feminist educational research

can be thought of as an example of the post-feminist project of examining the complexity of identity, positionality, objectivity, and research.

It is important to note that attendant to the emergence of Black feminist theories, other women of color have also articulated feminisms informed by their cultural locations. Chicana, Asian, and American Indian feminists have worked along with African American feminists in the quest for equity (Anzaldúa 1990; Bernal 1998; James and Busia 1993; Minh-ha 1990). These feminists of color have examined the ways in which nationality, ethnicity, and language can serve as both spaces of marginality and liberation for women of color. As Black feminist research and scholarship has sought to address the multiple layers of identity for black women specifically, but also broadly for all women of color, the projects undertaken by women of color have extended this notion of multiplicity. Specifically, feminists of color have explored issues related to immigrant status, language diversity, and their impact on the lives of women of color.

The future of feminism in education and educational research appears to be bright. Feminists continue to expand the boundaries of what and how scholars know what they know. A more careful consideration of the complexity of identity, subjectivity, and positionality continue to be the focus of much of the new feminist scholarship. Moreover, this work seeks to understand how these issues affect women in particular contexts and seeks to uncover the situatedness of sexual inequality and women's responses and resistances to it. More work is emerging that examines girls' experiences in schools, taking into account the complexity of identities that constrain multiple communities simultaneously (Lei 2003). Moreover, these "new" feminist researchers are able to speak across communities given the focus on the complexity of identity. More and more, scholarship and researchers are seeking to abandon distinct theoretical categories and find ways to work collaboratively. This makes it possible for scholars working across different multicultural traditions (e.g., queer, race, feminism) to find commonalities in each others' work. As such, these collaborative projects enable us to work toward a full realization of liberty and justice for all.

Adrienne D. Dixon

EQUITY AND TECHNOLOGY

Technology has always occupied an important space within the American education system. Serving mainly as an instructional aid for the teacher, technology has varied in form beginning with the blackboard (and textbook) to more advanced devices such as the radio, film, television, and videotape recorder (VCR). The introduction of technology to schools in many ways is part of the discussion on the purpose of education. Debates on the purpose of education have varied from socializing students to the cultural values of American society by emphasizing the precepts of democracy (e.g., citizenship); preparation for the workforce; to the development of a "deep understanding of the political, racial, economic, scientific and technological realities that confront the survival" of students of color (Madhubuti 1998, 5). In other words, whatever the purpose of education, technology has served as a mechanism to convey it.

Technology in many ways has been a proxy for how the education system has evolved in the United States. For example, in the 1920s films were introduced to schools as a means to visually bring to life the textbook and classroom discussions. Similarly, in the 1950s supporters of television argued that it could supplement the curriculum, as well as assist the teacher in meeting the instructional needs for an increasing student population (Cuban 1986). During the 1980s, however, schools experienced a paradigm shift with the introduction of computers. Although computers had been in existence since 1945 they were exclusive to the military and commercial sectors of American society (Ceruzzi 2000). Computers now were seen as a way to improve learning and efficiently manage students.

Unlike previous technologies, computers were capable of providing direct individualized instruction and assessing a student's progress without involvement from the teacher (Streibel 1998). For example, with computer tutorials, the student's response determined the next instructional sequence of the lesson. The computer tutorial guided the student through lessons by posing a series of questions one at a time until they have demonstrated mastery of the content. In addition, the skills students acquired from computer usage had been identified as necessary for employment; as well as economic, so-

cial, and civic participation for the twenty-first century. As a result, schools explicitly became the site where students were expected to create, apply, and use information in multiple settings. Thus computers were considered instrumental to the learning process and an indication that students were being provided with a quality education.

As computers became more commonplace in schools and increased in social significance, educational stakeholders (e.g., parents, politicians, business sector) and researchers raised new concerns about equity. For example, in addition to concerns about student achievement, funding disparities and low teacher expectations, stakeholders from historically marginalized groups (e.g., African Americans and Latinos) now had to contend with issues of access (the Digital Divide) and discrepancies in the use of educational technology.

DIGITAL DIVIDE

In 1999, during the Clinton presidency, the U.S. Department of Commerce declared that America had entered the Information Age in which various segments of society, including the entire economy, would rely on digital technologies. That declaration helped to raise the nation's awareness about disparities in access to information technology between the information rich (whites and Asian Americans, individuals with higher education and incomes) and the information poor (African Americans and Latinos, individuals residing in inner-city and rural communities, and those from low socioeconomic backgrounds). The "digital divide" served as a mantra for those concerned with closing the technological gap between communities (and individuals) that could effectively use information technologies such as the Internet and those that could not (Digital Divide Network at www.digitaldividenetwork.org).

Measures to assess and bridge this technology gap began with an examination of the personal ownership patterns of computers between the haves and have-nots. The digital divide's emphasis, however, quickly shifted to education where the distribution of computers was comparatively measured between schools defined along demographic characteristics such as race and socioeconomic status. Subsequently, the digital divide in education illustrated that the unequal distribution of information technologies (computers,

software, email, and the Internet) between public and private schools, urban and suburban (and rural) school districts, and school districts with predominately African American and Latino students versus white student populations was more than a correlation between race and socioeconomic status (Hess 1999). A critical analysis of the digital divide showed how inequities in access to technology were the result of systemic oppression and exclusion of people of color in the United States (Light 2001).

As computers were becoming an ubiquitous feature of schools, critiques by education scholars and researchers began to make connections between issues of access (and use) to systems of oppression and exclusion. Critical education scholars such as: C. A. Bowers (1976, 1988, 2000); Michael W. Apple (1995, 1998a, 1998b); Robert McClintock (1998); Larry Cuban (1986), and many others used various theoretical perspectives (Cultural, Neo-Marxist, Post-Modern, and Ecological) to explain how equity in more qualitative and structural terms were affected by information technology. Unlike quantitative or technical attempts to bridge the digital divide by increasing the computer-to-student ratio, critical scholars in education sought to articulate how biases occurred as a result of adopting these machines. For instance, scholars using a cultural perspective argued that computers and the programs they operated were both ideologically and culturally biased toward Western ideological and epistemological traditions (Bowers 2000). Neo-Marxist and Post-Modern theorists were instrumental in pointing out the role and impact of free market principles and the State in justifying the incorporation of computers in education (Apple 1995, 1998b; Popkewitz 1991). Computers and related information technologies were not objective tools, contrary to their supporters' claims. Instead they were involved in the construction and use of power in terms of what counted as knowledge, how knowledge was constructed, and how knowledge was transmitted (Bromley 1998). In addition, power was also manifested in the physical and programmatic design of computers and software.

The contribution of these nontraditional perspectives of technology continues to be that they provide ways to think about educational equity and technology as more than access to machines. Cultural, Neo-Marxist, Post-Modern, and Ecological

theories of technology in education helped to show those committed to social justice that equity is a complex issue. These critical theories of technology in education however are limited by their inability to address issues of equity specific to people of color. For example, the cultural perspective does not acknowledge that computers could be (and have been) a mechanism that perpetuated existing inequities as a result of varying rates of infusion. In addition, these critical theories have ignored the unique historical experiences that racial groups like African Americans have had with technology (Walton 1999). Interestingly, it was also during the mid-1980s that researchers began to study the educational uses of information technology in schools with large concentrations of students of color, and in schools with a large percentage of students of high socioeconomic status, as a way to speak to these specific issues of equity. Issues specific to technology and equity were expanded to not only address the varying rates of infusion across diverse school settings, they also included examinations of how learning expectations determined the use of computers in the education of students of color.

EDUCATIONAL USES OF COMPUTERS IN DIVERSE SETTINGS

Edmund W. Gordon and Eleanor Armour-Thomas published *Computer Technology and Educational Equity* in 1985, one of the first monographs to report that when access to computers was not the problem inequities existed with the application of these machines. Gordon and Armour-Thomas (1985) found that in poor school districts students from low socioeconomic backgrounds regularly took part in computer-assisted instruction that used drill and practice methods. In middle-class and more affluent schools it was reported that students were more likely to have engaged in more creative and challenging instruction with computers (Gordon and Armour-Thomas 1985). Drill and practice uses of computers were seen as problematic for two reasons. First, drill and practice as a teaching method uses the principle of trial and error instead of directed instruction. Second, the student in this pedagogical approach is positioned as a passive learner and a consumer of information, instead of an active participant in the learning process. Therefore

the student within drill and practice instructional pedagogy is totally dependent on the computer for guidance.

More recent studies on the topic have shown that in predominately African American and Latino settings, schools used computers to develop skills such as pattern recognition through rote memorization. These studies suggested that such skills were required for a compliant workforce and for individuals more likely to occupy service-oriented or low status jobs (Becker and Ravitz 1998). In mostly white schools where the educational uses of computers emphasized creativity, independence, and higher-level thinking skills, it was argued that such instructional practices equipped students with the “social capital” necessary to maintain and reproduce their socioeconomic status (Bourdieu 2000; Persell and Cookson Jr. 1987; Becker and Ravitz 1998).

The findings from studies on the educational uses of technology in diverse school settings have been instrumental in contributing to the expansion of the discourse on equity. In addition to having agreed upon the importance of access to technology, education researchers in this area have sought to examine just-ness of the experiences, relationships, and outcomes that occur because of the machines. Furthermore, these early examinations of the pedagogical uses of information technology in diverse settings have led to the creation of software programs designed to counter cultural biases and low-level instruction. For example, the program Rappin Reader is designed to foster students’ language skills so they can become independent readers and writers by engaging in various physical and conceptual settings (Pinkard 2001).

EXPANDING THE DISCOURSE ON EQUITY

The introduction of technology to education has provided new opportunities to think about equity in unique ways. As illustrated by the examination of the digital divide and the pedagogical uses of computers in diverse settings, technology lends itself as a framework to understand both the theoretical and qualitative aspects of what equity is and is not in education. For example, researchers have studied the discrepancies in the educational uses of computers as a means to measure the justness of actions even if they appear

to be in accordance with shared rules (Secada 1989). What are also of import are the theoretical and conceptual linkages that have been established for future scholars and researchers seeking to focus on issues of equity and technology specific to people of color.

Much of what has been written, researched, and discussed about equity and technology in the education of people of color can be traced back to the early part of the twentieth century. The works of Carter G. Woodson (1990) and W. E. B. DuBois (2001) precede the findings put forth by contemporary education researchers in this area of equity and technology. Woodson (1990) was one of the first education scholars/researchers to problematize pedagogical practices such as drill and practice and rote memorization with regards to its relevancy and usefulness to the survival of Americans of African descent. Similarly, DuBois's (2001) critique of the *Hampton Idea* and industrial education's emphasis on teaching skills to make one competent to use machines was that it did not require nor render great intelligence. As technology becomes more established in education, new theoretical perspectives have been introduced to education to include the historical and current collective status of people of color while simultaneously examining the changes caused by technology in order to expand the discourse on equity (Donnor 2003). Like technology, equity is not static.

Jamel K. Donnor

RACE AND EDUCATION

The question of race is at the very heart of U.S. education. It is a perennially salient issue that predates the U. S. Supreme Court's 1896 ruling in *Plessy v. Ferguson* to allow states to maintain "separate but equal" public facilities (Meier, Stewart, and England 1989). For example, the intersection of race and education is evident in 1787 in a supplication made to the Massachusetts state legislature to obtain equal educational rights for the children of black free men. Adult black Bostonians made their case on the grounds that they, like their fellow citizens, shared the burden of supporting the very public schools to which their offspring were being denied access

(Aptheker 1990). Although the request was denied, their petition is a testament to the centrality of race in U.S. education dating back to the colonial period.

The above example also illustrates that even as education is inextricably tied to notions of justice and citizenship, it is also linked to the oppression of subordinated racial groups in the United States. Since the beginning of formal education in the United States a dominant view that citizenship should be limited to free whites informed popular attitudes about the role that education should play in the lives of people of color. For example, the majority of white citizens in the American South believed that educating captive Africans would render them unfit for servitude, making it impossible to retain them as slaves (Woodson 1919). During the same period, tribal school systems administered by white missionaries and buttressed by the *Civilization Fund Act of 1816* sought to abolish the cultures of Native Americans and to replace them with middle class Anglo-American Christian mores, values, and customs (Spring 2004).

Formal efforts to direct the education of people of color in the interests of the dominant white society generally have been countered by grass-roots efforts. For example, by the time that the Freedmen's Bureau Act was passed by Congress in 1865, newly emancipated slaves had already created educational systems for themselves and had reduced the black illiteracy rate by a substantial amount. In addition to literacy instruction, black communities had also developed programs that emphasized a classical liberal curriculum. The words of Richard Wright, a post-Reconstruction Era black educator, illustrate how black educators during this period took up the classical liberal curriculum to advance the cause of equality and, by extension, citizenship and democracy:

It is generally admitted that religion has been a great means of human development and progress, and I think that about all the great religions which have blest this world have come from the colored races—all . . . I believe too, that our methods of alphabetic writing all came from the colored race, and I think the majority of the sciences in their origin have come from the colored races . . . Now I take the testimony of those people who know, and who, I feel are capable of instructing me on this point, and I find them saying that the Egyptians were actually woolly-haired negroes . . . Now,

if that is true, the idea that this negro race is inherently inferior seems to me to be at least a little limping. (quoted in Anderson 1988, 29–30)

Efforts on the part of communities of color to realize an education to best meet their goals during the pre- and post-Civil War periods were largely subverted by both legal and extra-legal efforts by members of the dominant society. As suggested by this brief introduction, conflicting views of the role and purpose of education in minority communities have characterized the nearly four-hundred-year struggle around the meaning of race and education in the United States. On one end of the ideological and programmatic spectrum is the advocacy of an education to extend the practice of freedom and democracy to communities of color; on the other end is the advocacy of an education for minority groups to ensure the maintenance of white supremacy.

THE BROWN RULING AND EDUCATIONAL JUSTICE

Race and education took on distinctive meanings when the Supreme Court rendered its decision in *Brown v. Board of Education of Topeka, Kansas* (hereafter *Brown*). The landmark 1954 ruling provided the legal basis for equal education for all subordinated racial groups. That the *Brown* ruling had implications for extending educational opportunities to groups beyond the black plaintiffs represented in the consolidated cases around which the 1954 ruling was based is illustrated in the 1927 *Gong Lum v. Rice* case (hereafter *Gong Lum*). In this case, the Supreme Court applied the “separate but equal” formulation of *Plessy v. Ferguson* to affirm a Mississippi school district’s decision compelling a Chinese American girl to attend a segregated black school rather than a white school in which her parents tried to enroll her. *Brown* was sweeping in its mandate to shape race and education in the United States and rendered rulings such as *Gong Lum* unconstitutional.

However, the Supreme Court failed to provide clear guidelines to end de jure public school segregation. The imprecision of the Court’s ruling, captured in the order to proceed in the dismantling of segregated schools “with all deliberate speed,” all but guaranteed that the desegregation of public schools would occur at a snail’s pace. For instance, some of the white

communities affected by the ruling attempted to close public schools rather than allow black students to attend them. Others adopted “freedom of choice” plans that permitted students to choose the schools where they wanted to attend. Predictably, freedom of choice plans generally resulted in continued segregation of public educational facilities. Even in instances where authorities attempted in good faith to implement plans to desegregate schools, these efforts were often undermined by state-level action.

As a result of the resistance to the Supreme Court’s 1954 ruling, little dismantling of de jure segregation in public schools occurred during the decade after *Brown*. In addition, *Brown*’s implications for non-southern schools were even less clear. The segregation of schools in non-southern regions of the country occurred as the result of housing patterns that allegedly were not the result of direct state action, although researchers later found evidence that demonstrated the complicity of both local and federal governments in maintaining the color line (e.g., Massey and Denton 1993). It wasn’t until 1973, in *Keyes v. School District of Denver*, that the Court expanded *Brown* to include the dismantling of de facto segregation in public schools.

Despite the often-violent resistance to desegregation, the constitutional impact of *Brown* was enormous and lasting in shaping race and education in the United States. For instance, the Court’s ruling resulted in a dramatic increase in the number of desegregation suits filling lower court dockets. In addition, the *Brown* ruling had extra-legal, or indirect, effects that shaped race and education in the United States, even those that perhaps went beyond the intention of the landmark 1954 decision. In upholding the Equal Protection Clause of the Fourteenth Amendment in its rendering of *Brown*, the Supreme Court largely affirmed civil and political rights, also known as First Generation Rights. At the same time, the ruling was also the impetus for social movements, such as the civil rights movement of the late 1950s and 1960s and Black and Chicano power movements of the mid- to late 1960s and early 1970s. These social movements not only pressed for the implementation of the civil and political rights guaranteed by *Brown*, they also pressed schools to recognize social cultural, and economic rights of minority groups. These latter rights are also called Second Generation Rights. The U.S. Constitution, upon

which court rulings in America are based, largely protects First Generation Rights. The Universal Declaration of Human Rights, about which oppressed racial groups around the world mobilize but to which U.S. courts are not bound, affirms both First and Second Generation Rights.

Thus, despite the resistance of local communities to desegregate public schools, the efforts of various social movements resulted in increased pressures to end segregated educational facilities as well as to change the curricula in these institutions. For example, the civil rights movement created the social milieu for the passage by Congress of both the *Civil Rights Act of 1964* and the *Elementary and Secondary Education Act of 1965*. These legislative mandates paved the way for the 1968 *Green v. County School Board of New Kent County (Virginia)* (hereafter *Green*) court ruling that marked the turning point for the end of de jure segregation and the beginning of the desegregation era. In the *Green* ruling, the Supreme Court held that “freedom of choice” plans implemented by a number of Southern communities were ineffective at dismantling school segregation and set clear guidelines for lower courts to proceed in the desegregation cases brought before them. The guidelines set forth in the *Green* decision became the criteria by which school districts seeking unitary, or desegregated, status were evaluated. These guidelines, known also as the Green factors, included criteria for racial balance and equity in the areas of student assignments, faculty, staff, extracurricular activities, facilities, and transportation.

Brown resulted in the slow but substantial integration of elementary and secondary public schools, especially in the South, as well as in the dramatic increase in the number of students of color in predominately white universities and colleges in the 1970s and the 1980s. The increase in the number of students of color in American colleges and universities also forced substantive changes in the academy as minority students protested the absence of professors of color, the implementation of insensitive and hostile administrative policies, and the use of curricula that either distorted or excluded their historical and cultural experiences in courses that shaped their education. Significantly, Black student movements of the 1960s resulted in the establishment of a Black Studies program at San Francisco State University, the first such program ever instituted at a

college or university in the United States. Similarly, Chicano student movements led to the first Chicano Studies program being established at the California State University at Los Angeles in 1969.

The eruption of ethnic studies programs in American colleges and universities stimulated curricular changes in U.S. public elementary and secondary schools as well. These changes are evident in yearly observances of Black History Month, for example, as well as in the adoption of multicultural curricula in K–12 education. Demands for multicultural elementary and secondary education resulted in changes in the content of textbooks and in how schools and colleges of education certificated teachers and administrators, especially those preparing to work in urban and suburban schools districts with large minority student populations. Race-conscious social movements also contributed to improving the education of students in K–12 education that had been denied access to quality education for reasons that did not have explicit racial overtones. For instance, the *Brown*-inspired *Civil Rights Act of 1964* also opened the door for language-minority students and for students with disabilities to gain greater access to quality schooling.

RACE AND EDUCATION IN POST-CIVIL RIGHTS AMERICA

Federal legal interventions into matters of race and education, such as *Brown*, never fully equalized the resources that students of color received, in terms of either direct student funding or the treatment of students by teachers. Nonetheless, the passage of civil rights legislation and the efforts of race-based social movements resulted in unprecedented gains for members of oppressed racial groups in education and subsequently all areas of society. Access to quality education, for instance, helps individuals gain access to certain types of jobs and is the key to both upward social mobility for members of oppressed racial groups and the ability of these groups to transmit socioeconomic status to their young. A review of the research literature on occupational and adult networks point to the following conclusions that support the contention that educational access translates into social mobility: black students who attend desegregated K–12 schools are more likely than black students in segregated public schools to have desegregated social and

professional networks later in life; desegregated black students are also more likely to work in desegregated settings; and black students who attend desegregated K–12 public schools are more likely to work in lucrative white-collar and professional jobs in the private sector than are their black peers in segregated schools, who are more likely to find work in government and blue-collar jobs (Wells and Crain 1994).

In addition, education is one of the ways that a nation forms its citizens and transmits across generations the rights and duties of citizenship, the basis and rationale of these rights and duties, and the sense of civic responsibility that such obligations entail. The intersection of race and education is especially evident in this sense in the link between Citizenship Schools and the mobilization of the civil rights movement in the South during the 1950s and 1960s (Morris 1984). Education is also a means to change attitudes and to challenge received notions about society. As Justice Sandra Day O'Connor wrote in the majority opinion in *Grutter v. Bollinger* (2003) (hereafter *Grutter*) that upheld affirmative action in higher education admissions, education in diverse settings promotes cross-racial understanding, helps to break down racial stereotypes, and enables students to better understand people of different races. A national Gallup poll conducted in the late 1980s supports O'Connor's contention, finding that a huge majority of Americans (87 percent) believe that the 1954 Supreme Court *Brown* decision that abolished de jure school segregation was correct. This is a sharp increase from 63 percent in support of the decision in the early 1960s and is evidence of the capacity of education in integrated settings to alter public opinions about race relations in the United States (Orfield 1995).

Even as the *Brown* decision contributed to unprecedented improvements in the conditions of racial minorities, it did not completely resolve the four-hundred-year struggle that has shaped questions of race and education in the United States. For example, one result of *Brown* was the massive decline of black educators in teaching and administrative positions in K–12 public schools (Ethridge 1979). In the absence of these educators, many students of color who integrated K–12 public schools often encountered second-generation discrimination and other challenges to obtaining a quality education (Meier, Stewart, and England 1989). For example, *Brown* never challenged the assumption of white supremacy

in society and this omission has had contradictory consequences for students of color in public schools. On the one hand, students of color who exceed the expectations of their white teachers are often regarded as “unusual” and as exceptions to the racial academic norms (Morris and Morris 2002). Autobiographical and ethnographic accounts of race and education indicate that the preferential treatment accorded to successful students of color by their teachers often cause them to be either estranged from or ostracized by their peers. Other studies document the dilemmas of “acting white” and the oppositional attitudes and academic disengagement that constitute part of the legacy of race and education in post-Civil Rights America (Fordham 1996; Ogbu 2003).

On the other hand, from the outset of school integration, black students in the main encountered second-generation discrimination, or the resegregation of students within schools once they were desegregated. Integrated schools typically sort students into homogeneous subsets by ability groupings. This generally results in the concentration of white students in honors and gifted classes and of students of color in lower tracks, remedial courses, and special education programs. Significantly, although disparities in measures of academic attainment between black and white students began to narrow in the 1970s and 1980s, they began to widen in the 1990s and into the first decade of the twenty-first century, resulting in much publicized reports of a “racial achievement gap.” Schools also use disciplinary actions, such as suspensions and expulsions, to sort students in ways that reinforce racial disparities in educational attainment. The racial gap in discipline of public school students increased in the late 1990s and the early 2000s as a result of the adoption by districts of zero-tolerance policies to curb real and imagined violence in American schools (Applied Research Center 1998). Widespread reports and highly publicized incidents of the expulsion of black students in the late 1990s refueled concerns in communities of color about educational justice and prompted the prominent civil rights leader the Reverend Jesse Jackson to observe that, with increasing frequency, “school districts [are choosing] penal remedies over educational remedies when it comes to disciplining students” (*Washington Post* 1999, A3).

Finally, despite the gains in school integration in the 1970s and 1980s, public schools have become more segregated in the 1990s and the early years of

the twenty-first century. Urban and fringe city school districts are being populated by increasingly multicultural populations of students of color from working-class and poor families and more affluent suburban schools are being populated by homogeneous bodies of white students from middle-class families (Orfield and Yun 1999). The reversal of school integration is attributable both to failed attempts to integrate schools at the local level as well as to significant Supreme Court rulings, such as *Milliken v. Bradley* (1974), that removed federal courts' power to impose inter-district remedies between cities and surrounding schools to desegregate city schools. Lastly, the resegregation of schools in the 1990s and 2000s occurs within a broader political context of changing public investments where states are increasingly spending more on criminal justice than they are on public education (Zeidenberg and Schiraldi 2002).

RACE AND EDUCATION IN THE TWENTY-FIRST CENTURY

Echoing a view expressed by W. E. B. Du Bois at the beginning of the twentieth century, the eminent American historian John Hope Franklin noted that the problem of race would also be part of the legacy and burden of the twenty-first century (Franklin 1993). Perhaps nowhere is Franklin's observation more evident than in the area of American education. The issue of race and education has resurfaced in the late 1990s and into the new millennium both to unify and to divide Americans. For example, the issue of school privatization has made for strange bedfellows in the political arena where liberal black civic and religious leaders have joined with conservative white politicians and foundations to support the establishment and public funding of vouchers and of privately run charter schools. The same period has also seen the unprecedented inroads made by for-profit educational companies into public schools, especially those with large minority populations. In a similar vein, in higher education, ethnic studies programs have yet to find complete acceptance or legitimacy in colleges and universities. In addition, there have been numerous attempts to dismantle affirmative action gains, with some of these efforts being successful.

At the same time, there is still broad support for

race-conscious educational policies, such as diversity, multiculturalism, bilingual education, and school-funding issues, in the arenas of K–12 schooling and higher education. In addition, despite recent challenges to affirmative action in higher education, a number of colleges and universities and other institutions in the United States have reaffirmed their support for race-conscious educational policies to increase the number of students and faculty members of color in academia. The Supreme Court's preservation of the narrow use of affirmative action in higher education in its 2003 *Grutter v. Bollinger* ruling also lends renewed hope and support for the struggle by oppressed racial groups to obtain educational justice in the United States. However, whether or not such conditions will be realized within the twenty-five-year period expressed by Justice O'Connor in rendering the majority opinion in *Grutter* is one of the central questions confronting race and education in the new millennium.

Garrett Albert Duncan

QUEER STUDIES: SEXUALITY IN EDUCATION

Since the beginning of formal education in colonial America, matters of sexual orientation and gender expression have existed in U.S. schools. Social norms and stereotypes regarding what is "appropriate" or "natural" constantly emerged in school cultures by way of peer interactions (name calling, role playing, dating) and student-teacher interactions (for example, casual references to spouses). Schools often sanctioned or simply failed to challenge such messages, both implicitly through silence and explicitly through policies of who should or should not be hired to teach, how students should or should not behave and dress, and what should or should not be included in the curriculum.

In the early 1900s, a growing number of researchers and theorists turned their attention to sexual orientation and gender expression in schools, primarily in reference to the role of schools in fostering or hindering the development of healthy or socially preferable desires and behaviors among

children and adolescents. These early writings often deemed pathological any deviation among students and faculty from the norms of heterosexuality and of appropriate femininity for females and masculinity for males. Teachers were spotlighted: women teachers (and their teaching of certain subjects) were to be blamed for emasculating male students, and homosexual teachers were to be feared for possibly “contaminating” otherwise heterosexual students (Blount 1996).

The 1970s sparked significant improvements when the political consciousness of mainstream U.S. society, altered by multiple civil rights movements, influenced the ways that the field of educational research addressed sexual and gender differences.

GAY AND LESBIAN STUDIES AND EDUCATION

The deepening political awareness and civil unrest created by the 1960s civil rights and women’s movements helped make possible two historic events for lesbian, gay, bisexual, and transgender (LGBT) people in the United States: the resistance of LGBT people to police harassment at the Stonewall Inn in New York City in 1969 and the American Psychological Association’s decision to declassify homosexuality as a mental illness in 1973. In these events, activists and the medical establishment were asserting that homosexuality should not be pathologized and that homosexuals deserve rights equal to those of heterosexuals, assertions that would fuel the growth of gay and lesbian studies in colleges and universities throughout the 1970s. Gay and lesbian studies produced psychological and sociological research about the experiences of gay and lesbian (and sometimes bisexual and transgender) people and the negative impact of homophobia in their lives, historical and anthropological research about same-sex desire in other cultures and eras, and theories about the normalcy of same-sex desire (Tierney and Dilley 1998).

Within the field of educational research, gay and lesbian studies took longer to emerge than other fields of research within equity studies. A few publications appeared in the 1970s, as did a growing body of feminist studies that would later significantly influence the study of sexual orientation, but it was not until the 1980s that research on gay and lesbian issues in education began to proliferate, especially studies of

schooling at the elementary and secondary levels and studies of masculinity and homophobia. More educational journals and books included articles on the social and academic experiences of gay and lesbian students and the different ways that homophobia manifested in schools, and on the various ways that curriculum could both perpetuate and challenge stereotypes and myths about gay and lesbian people.

In the 1980s, a rapidly emerging national and international epidemic—the spread of HIV/AIDS—became linked with this call to challenge homophobia and to teach students about gay and lesbian people. Initially considered an African and Caribbean disease, AIDS acquired the label of a “gay disease” by people both in and out of the medical profession because, in the United States, it seemed to infect primarily gay and bisexual men. As more schools began teaching about HIV/AIDS (and ways to avoid its infection), more educators found themselves with a politically safe context in which to teach about gay and sometimes lesbian and bisexual people, namely, as the population most associated with AIDS. In fact, health classes, particularly lessons on AIDS and sex education, soon became the most common places to teach about gay and lesbian people. Ironically, while such an approach enabled schools to break the silence surrounding gay and lesbian people, it continued to pathologize them by associating gay and lesbian identities with illness. Thus, in the wake of AIDS, educational research and especially the field of curriculum studies began focusing more attention on how to include or integrate gay and lesbian people and issues across the disciplines, or at least, how to teach about gay and lesbian identities without reducing them to sexual activity, disease, and death (Harbeck 1991).

The difficulties of representing the diversity and complexities of LGBT identities were not easily solvable. Curriculum resources and empirical research—even those produced by LGBT people—came under fire from other LGBT people for failing to address differences (on the basis of, for example, sexual desires, gender identities, and racial and class backgrounds) within their communities and for presuming to know what it meant for all LGBT people to be LGBT. Throughout the 1970s and 1980s, similar criticisms led groups to splinter from larger political and social organizations that failed to address the experiences and needs of subpopulations of LGBT people, including bisexual and

transgender people, women, and people of color. As was happening in women's and civil rights movements across the United States, identity-based political organizing for LGBT people was under fire for operating in contradictory ways, namely, by challenging some forms of oppression and addressing certain populations while overlooking others.

Up through the 1980s, the publishing industry did not make it any easier to print curriculum resources and research that represented the diversity and complexity among LGBT people and issues. Most journals and book publishers had yet to publish any research on such topics, and few editors were openly supportive of doing so. Few researchers could engage in this area of research without fear for their professional, social, or physical well being. Few resources, financial as well as collegial, were available to researchers and curriculum developers (exceptions include the Lesbian and Gay Special Interest Group in the American Educational Research Association, created in 1987). However, times were changing, and as researchers found more opportunities to study LGBT issues, the epistemological landscape was shifting, creating new theoretical lenses for this work.

“QUEER” STUDIES OF EDUCATION

In the late 1980s and early 1990s, postmodern and poststructural theories emerged in the field of educational research and offered alternatives to identity-based political theories and movements. These “post” theories called attention to the situatedness of identity and oppression, that is, on the ways that identity and oppression played out differently in different contexts, and on the ways that embracing differences or challenging oppression required different approaches, depending on the context. “Post” perspectives on LGBT identities made it difficult to say what it meant to challenge the oppression of LGBT people when it was not clear what exactly those identities and oppressions were. Within this paradigm shift emerged “queer studies,” a movement that focused less on normalizing LGBT identities and more on examining and contesting the very meanings of normal, including those meanings embraced by LGBT communities (Pinar 1998).

Queer studies of education changed the focus of research and curriculum theory in several ways: (1) from repressing homophobia to unearthing

heteronormativity; (2) from Lesbian/Gay (LG) to Lesbian, Gay, Bisexual, Transgender, Intersex, and Queer (LGBTIQ); and (3) from inclusive curriculums to partial ones. In the first instance, much research from the 1980s and into the early 2000s focused on the dynamics of homophobia in schools, on the experiences of LGBT students with homophobia and, primarily, on ways to reduce homophobia. In contrast, queer studies called on researchers to focus their analysis on the mechanisms that placed value on, normalized, and regulated heterosexuality, especially certain forms of heterosexuality. This shift drew on Michel Foucault's *The History of Sexuality* (published in English in 1978), which argues that what we consider to be abnormal or queer is not merely something that society has repressed, but more importantly, something that society needed and produced. After all, what was normal could not exist without something else being queer, which meant that reducing the marginalization of queer identities could not happen without disrupting the privileging of straight ones (Britzman 1998). Examining the production and regulation of only certain kinds of heterosexual desire had already begun in feminist research on ways that schools privileged and silenced different expressions of sexual desire among adolescent girls and boys. Queer studies in education drew on these studies of sexuality, as well as on psychoanalytic theories of the surprising ways that sexual desire emerged in schools, even among very young children, and even when educators presumed to have kept it out of the classroom.

Queer studies also drew on women's studies and ethnic studies as it raised questions about the ways that even queer identities can normalize other identities. Just as queer studies problematized the notion that hetero identities were more valuable or natural than queer identities, so too did it problematize the notion that certain queer identities (especially gay and lesbian ones) were more valuable or natural than others, including bisexual, transgender, intersexed, and questioning identities (LGBTIQ), as well as identities other than white, male, gender-appropriate, heterosexual, middle-class, able-bodied, and English-speaking. LGBTIQ identities could mean different things when referring to different bodies or in different contexts, and more researchers began to examine differences among LGBTIQ students and teachers and the ways their multiple identities came to bear on their schooling experiences. In the 1990s quantitative and quali-

tative research on the intersections of race and sexuality appeared with increasing frequency, and the first book on race, sexuality, and education was published in 2001 (Kumashiro 2001). More recently, researchers have studied queer educators and different ways of being both “queer” and an “educator” (Evans 2002; Talburt 2000).

The third shift signaled by queer studies is the focus on partial solutions rather than panaceas. For example, some researchers examined the strengths, weaknesses, successes, and failures of various programs and policies (Lipkin 1999). Examples include student “gay-straight alliances” on school campuses, safe-school policies (especially in the wake of costly lawsuits against school districts that failed to protect LGBT students from harassment and violence), and conservative backlashes (such as in New York City in 1991 when opposition to the inclusion of gay- and lesbian-headed families in the multicultural curriculum, “Children of the Rainbow,” sparked intense emotions and controversy). Primarily, researchers have studied curriculum, from problems of existing curriculums and materials to recommendations for curricular change for various age groups in a range of subject matters, including social studies, English literature, health, art, drama, music, and the natural sciences (Letts and Sears 1999). While some of these publications paralleled earlier publications by proposing solutions to the problem of exclusion and stereotypes in curriculums, others drew on queer theory to suggest that different approaches to curriculum revision have different strengths and weaknesses and that even inclusive curriculums can be problematic if they fail to raise questions about what it means to be LGBTIQ or how homophobia and heteronormativity can play out differently for different groups in different contexts (Epstein, O’Flynn, and Telford 2001).

In 2004, queer studies of education continued to raise questions about who was being addressed and what was being taught by schools and by research on schools. Educational researchers were studying populations that had been overlooked by earlier research, including queer students who were transgender, disabled, very young, or were in the process of learning to teach. Researchers were conducting research on different subject matters (including the technological sciences) and ways to teach subjects appropriately to different groups (including young children versus adolescents versus adults). Researchers were

even exploring alternatives to the frameworks that had been taken for granted in gay/lesbian/queer studies. Alternative frameworks included the resilience of LGBTIQ youth (rather than their victimization and harm), the relationships formed among LGBTIQ youth (rather than between LGBTIQ youth and heterosexual youth/educators), and youth with unfixed identities who might be LGBTIQ in some contexts, hetero in others, sometimes for political reasons, sometimes not (rather than youth with presumably stable identities). As more educational researchers come to embrace the impetus behind queer studies, the field of education can expect to continue examining the limitations of what has already been produced, while exploring the changes made possible by frameworks, topics, and questions that have, until now, been deemed too queer for examination.

Kevin K. Kumashiro

CULTURAL IDENTITY

Cultural identity emerges from an individual’s culture and cultural background. While culture is notoriously difficult to define, the most commonly agreed upon definition is that culture encompasses the way of life of a group of people, particularly that of a distinct ethnic group (Eisenhart 2001; Kroeber and Kluckhohn 1952). Under this definition, a culture provides ethnic group members with a framework for perceiving, interpreting, and making sense of the world around them. Cultural identity, then, is the degree to which one identifies with or is knowledgeable about her or his ethnic culture.

Assumptions about the one-to-one relationship between culture and ethnic groups have dominated and continue to dominate U.S. educational practice and policy. At times the distinct cultural identities of individuals and groups in the United States have been seen as threatening and problematic, and have thus led to calls for assimilation. At other times, however, cultural identity has been perceived to be a resource. Viewing cultural identity as a resource has resulted in educational practices and policies that respect, value, and celebrate diverse cultural identities. Since schools have consistently been important sites for debates surrounding cultural identity, we consider how shifting under-

standings of cultural identity have informed educational practice and policy within the United States.

CULTURAL IDENTITY AS THREAT OR RESOURCE

Historically, distinct cultural identities within the United States were viewed as threatening and at odds with a singular national identity. According to this perspective, the path to becoming American required the rejection of native cultures in favor of the mainstream “American” culture (i.e., white, middle class culture) (Gordon 1964). Cultural assimilation was understood to be a prerequisite for socioeconomic assimilation, social mobility, and the successful achievement of the American dream. Failure to assimilate into the dominant culture was thought to be problematic for both the immigrant and the larger society because groups who failed to assimilate were perceived as political, economic, and social threats to the country. This push for Americanization can be seen throughout the history of American schooling, and it continues today in the conversations about the education of newer immigrants and other students of color.

In direct contrast to those who have argued that cultural identity is a threat are those who have understood cultural identity as a resource. Cultural identity has been perceived as a positive asset for both the individual and the national community. At the individual level, healthy psychological development includes an awareness of and appreciation for one’s own cultural identity (Tatum 1997; Cross 1991). And at the societal level, complete and accurate understanding of our history and even contemporary American culture requires knowledge about the diverse groups who make up the United States and the distinct cultures that compose our national culture.

The debate between these understandings of cultural identity as either a threat or a resource is reflected in, and helps shape, various educational practices and policies within the United States. What follows is a review of how particular educational trends and programs—namely the Common School Reform movement, Indian education, culture of poverty theories and programs, cultural difference theories, bilingual education, ethnic studies programs in higher education, and, finally, community-based schools—intersect with shifting understandings of cultural identity.

During the Common School Reform movement, schools were increasingly called upon to solve the perceived social ills that plagued the new republic. Concerns regarding the continuing influx of immigrants from southern and eastern European countries shaped the role of schools throughout the end of the nineteenth century and the beginning of the twentieth century. In particular, it was believed that a distinct ethnic or cultural identity was at odds with a national American identity. Schools, therefore, sought to “Americanize” immigrants through a variety of methods, including “instructing youngsters in middle-class hygiene and manners, diet and food preparation, home management, dress, aesthetic and literary standards, recreation, the rights and duties of citizenship, accentless English, and the myths and legends of U.S. history” (Olneck 2004). By ridding new citizens of their “old world” values, norms, and behaviors, educators played a key role in protecting the legitimacy of the new American cultural identity.

The education of Native Americans during the nineteenth and early twentieth centuries was similarly informed by a desire to strip “Others” of their native cultural identities and assimilate them into the dominant American culture. In 1879, the first off-reservation boarding school was founded in an effort to “kill the Indian, and save the man.” The boarding schools re-educated native children by prohibiting their native languages and spiritual practices, cutting hair, and changing their names and clothes to reflect European norms. During the boarding school movement that lasted from the 1880s to the 1920s, over twenty-five schools in eighteen states “educated” thousands of Indian children through these methods.

In the 1960s the culture of poverty theory gained popularity in educational policy and discourse. According to this perspective, the conditions of poverty lead to a destructive way of life for low-income families and communities (Lewis 1966). Culture of poverty theorists argued that poor and working class children develop problematic cultures—including negative attitudes, values, and behaviors—that make it difficult for them to take advantage of educational opportunities. In response to culture of poverty theorists, educational policies aimed at assimilating poor and working class kids into mainstream middle class culture. Compensatory educational programs (e.g., Upward Bound, Head Start, and A Better Chance)

were designed to teach students to function in mainstream American culture.

During the 1970s educational anthropologists, responding to the perceived ethnocentrism of culture of poverty theories, argued that working class and ethnic cultures were not deficient in comparison to the dominant mainstream (i.e., white, middle class) culture, but simply different. These cultural difference theorists took a cultural relativist position in arguing that all cultures have equal value. They argued that many working-class and ethnic minority children struggled in schools primarily because of cultural mismatches between these students' home cultures and the classroom culture. In particular, these theorists pointed to cultural mismatches related to various ways of speaking, listening, and interacting with authority figures (Hymes 1972; Erickson and Mohatt 1982; Philips 1983; Heath 1983). They were among the first to call for culturally sensitive pedagogy, in which students' cultures were reflected in teaching styles and curriculum. According to cultural difference theorists, therefore, awareness of and attention to cultural identity can result in curricular and pedagogical practices that lead to higher academic achievement among students of color (Au 1980; Erickson and Mohatt, 1982).

Advocates of bilingual education have argued that heritage language is central to cultural identity (Tse 2001; Valdes 2001). Maintenance of the heritage language is understood to be central to academic achievement, family relationships, and an individual's self esteem (Tse 2001). From this perspective, efforts to quickly transition non-native-English-speaking students to English without attention to the maintenance of their native languages are tantamount to subtractive assimilation (Valenzuela 1999).

The development of ethnic studies programs represented an effort to value distinct ethnic groups within higher education. The first ethnic studies programs were developed in the 1960s in response to student demands that their cultures and cultural identities be reflected and respected in institutions of higher education. By focusing on the histories, experiences, and cultures of various ethnic groups in the United States, ethnic studies programs resisted the assimilating discourses of the Eurocentric curriculum.

Community-based education programs such as tribal schools and colleges and Afrocentric schools recognize that students' unique cultural identities

must be fully incorporated into curricula, pedagogies, school organizational structures, and campus climates. In her ethnography of the Rough Rock Demonstration School on the Navajo Reservation, T. McCarty demonstrates how "schools have the potential to silence or give voice to identities rooted and mediated in the local language and culture" (McCarty 2002). Whereas educational programs and practices that perceive cultural identity as a threat tend to silence students' unique identities, community-based schools that view cultural identity as a resource work hard to give voice to those identities in order to provide a more effective and culturally relevant education for all students.

During the 1980s and 1990s, a number of conservative scholars again raised concerns about the impact of cultural diversity on our nation (Hirsch 1987; Bloom 1987; Schlesinger 1992). Rather than emphasizing the value of cultural differences, these scholars and educators have argued for a focus on assimilating all Americans into a common culture. Furthermore, according to this perspective, educational practices that focus on particular cultural groups limit children's sense of and knowledge about our shared national cultural, which in turn impedes effective communication across differences and their ability to participate in our national community. It is argued that America's sense of a shared cultural identity is threatened when teachers and curricula focus on the differences between various cultural identities and ethnic groups. Schools should, therefore, emphasize America's common, shared culture over cultural differences.

The debate over the value over cultural identity continues, with both sides sharing some common assumptions about the nature of culture and cultural identity. Three assumptions that persist within mainstream conversations about cultural identity as either a threat or a resource are: culture equals ethnicity; cultural identities are preexisting given that they arise from one's ethnic background and family; and culture is something located in the racialized Other. Recent scholarship on cultural identity has begun to challenge all of these assumptions.

NEW CONVERSATIONS ABOUT CULTURAL IDENTITY

Recent conversations within cultural anthropology have challenged the one-to-one relationship between

culture and ethnic groups, pointing to variation and fluidity within groups (Abu-Lughod 1991; Clifford 1986). Scholars in the field of education have begun to talk about cultural identities as being “produced” in schools through interactions (Levinson and Holland 1996). From this perspective, students’ cultural identities are not seen as inherent. Instead, cultural identities are understood to be constructed in relationships and, therefore, are always in progress and unpredictable (Eisenhart 2001; Levinson and Holland 1996). Common to the newer conversations around cultural identity is the idea that culture is neither fixed nor simple and thus cannot be reduced to singular or essentialist characterizations.

Scholars in the field of multicultural education have increasingly moved beyond a sole focus on race and ethnicity (Sleeter and Grant 2003; Nieto 2004; Banks 2001). Many now argue that cultural identity includes race, gender, class, ability, religion, sexuality, ability, and other identities. These scholars also draw our attention to the intersection of identities, with the recognition that we all have multiple aspects to our identities.

Scholars writing in the field of critical whiteness studies have argued that most discussions regarding cultural identity have located culture in the racialized or ethnic “Other.” They argue that viewing cultural identity as something located solely in the racialized or ethnic Other leads to the invisibility of whiteness and the belief among white people that they do not have a racial or cultural identity. Research on white youth, for example, has found that the focus on the Other causes white students to simultaneously view racial others as exotic and different and themselves as normal (Perry 2002; Kenny 2000).

It remains to be seen whether and how ideas from the new scholarship on cultural identity will trickle down into the debate among educators and practitioners. If this occurs, the debate will no longer be simply about whether cultural identity is good or bad—that is, whether it is a threat or resource—rather, it will be about how to value the identities students bring with them to school while also recognizing the fluid nature of identities. Furthermore, the differential power and privilege across identities will need to be considered in the development of future educational practices and policies.

Stacey J. Lee and Angelina E. Castagno

CRITICAL PEDAGOGY IN EDUCATION

Critical pedagogy is often misperceived as being a monolithic entity; however, as the vast literature and diverse positions that fall under this rubric indicate, there are a multiplicity of theoretical camps and differences therein and no generic definition can be applied to this term. Even the conceptual descriptors used to map such educational terrain vary: names such as critical literacy, insurgent multiculturalism, critical and resistance multiculturalism, liberatory pedagogy, transgressive pedagogy, and revolutionary critical pedagogy.

Part of the reason for this diversity of labels is that critical pedagogy continues to emerge out of a myriad of intellectual fields of study as well as theoretical and activist voices that are dealing with area-specific circumstances and issues. A brief history of this interdisciplinary unfolding is crucial in order to understand the current concerns and practices of critical educators—that is, the significant theoretical insights and practices that are woven throughout these various concepts, which grow out of, generally speaking, a common set of issues and abusive conditions that provide the focus for critical education within the shifting spheres of political conflict. However, it is important to point out that the following effort to trace these roots is not an attempt to illustrate a fixed, linear sequence of events; many of these theoretical developments are interconnected and reciprocal—or they have occurred simultaneously. It is also important to note that given the brevity of this definition of critical pedagogy, it is impossible to make reference to all of the influential voices and schools of thought that have played a role in its evolution.

Exploring the basic tenets of the work of Karl Marx (1818–1883) offers a great deal of insight into the actual meaning and use of the word “critical.” Marx (1859) was interested in how capitalism structurally divides societies into opposing classes. Within his historical materialist, political economy approach to understanding human existence (i.e., concerns over material conditions, relations of production and distribution, and political regulation), Marx argued that the material foundation of a society—with its fundamental economic structure—

provides a base on which all other elements, which are referred to as the superstructure, can be established: a legal system, political processes and government, religion, aesthetics and art, education, the family, and other cultural practices. From this perspective, social phenomena, including social relations between classes and corresponding forms of social consciousness, have their roots in relations of production and in class conflict. In other words, for Marx the mode of production conditions social, political, and intellectual life.

For Marx, ideology—the ideas of a society that serve to validate the power of the ruling social class, is part of this superstructure. The superstructure is thus complicit in producing what is now often referred to as a “false consciousness” among the proletariat; that is, the point at which members of society are conditioned so as not to be able to read into the ideology that works to exploit them and they consequently become uncritical tools of production and consumption.

Marx’s analysis sparked a great deal of interest in, and ongoing debate over, the relationship among economics, politics, and culture (Althusser 1995; Amin 1998). Influenced by and expanding these debates, Italian theorist Antonio Gramsci (1891–1937) was especially concerned with how the imposition of particular ideologies and forms of authority results in the reproduction—that is, the maintenance—of social and institutional practices through which dominant groups retain not only their positions of privilege and control, but often the consensual support of other members of society—even those most exploited. He referred to this process as hegemony (1971).

Also conducting extensive ideological critique—dialectical social criticism—in order to understand uses and abuses of power so as to be able to transform them was a group of German intellectuals at what became known as the Frankfurt School (Institut für Sozialforschung—the Institute for Social Research), founded at the University of Frankfurt, Germany, in 1923 (Jay 1996). This neo-Marxist think tank was, until 1933 with the rise of Adolph Hitler, the intellectual home for such influential thinkers as Max Horkheimer (1895–1973), Theodor Adorno (1903–1969), and Herbert Marcuse (1898–1979). Their reinventions of Marx into aesthetic and psychological theories and critiques of capitalist culture

became better known as Critical Theory and would profoundly influence the development and direction of critical pedagogy.

Critical social theories were also being expanded and appropriated by anticolonial, antiracist thinkers and activists such as C.L.R. James (1901–1989), Frantz Fanon (1925–1961), Amílcar Cabral (1924–1973), Aimé Césaire (1913–), and Albert Memmi (1920–). These revolutionaries, who were fighting against a long history of global colonialism and white supremacy, understood that economics, politics, and the cultural sphere made up of schools, media, and other public spaces that produce and disseminate knowledge are important forces in maintaining unequal relations of power in society. As clearly expressed in the extensive body of anticolonial work, imperialists have always understood the relationship between knowledge and power and thus how to control the psyche of people, public opinion, and consequently enforce systems of oppression (Fanon 1967; Memmi 1965). These revolutionaries provided theoretical frameworks and practices for confronting the ideologies, authority, and social relations that have driven the oppressive legacy of colonialism and imperialism.

Poststructuralists have also been interested in, and contributed to, understanding the power/knowledge/ideology configuration. By no means a monolithic group, many of these theorists—notably Roland Barthes (1915–1980), Michel Foucault (1926–1984), Pierre Bourdieu (1930–2002), and Jacques Derrida (1930–2004), have argued that consciousness, identities, meaning, and cognitive development are social constructions; that is, they are socially and historically produced within particular economic and institutional conditions and the politics and power relations of everyday life. Their central argument is that systems of communication, which are all social and historical constructions informed by particular ideologies, play a significant role in shaping human sensibilities and subjectivities.

More flexible than Marxist ideas around ideology and consciousness and the structuralist theorists who were in search of universal processes and mechanism that could explain meaning and human behavior in its entirety, the poststructuralists have explored how knowledge and identity are constructed in specific social conditions and relations of power. Of particular importance to Foucault (1972) was discourse.

Rather than relying on the concept of ideology, discourse refers to the way reality is perceived through and shaped by established ways of making sense—that is, languages, systems of meaning, and practices that have been generated in order to sustain particular forms of social existence. However, Foucault was not simply intrigued by what kinds of knowledge exist; he was also engaged in tracing their origins, or what he called “the archeology of knowledge.” Key to Foucault’s analysis was that any consolidation of power is never complete and resistance and opposition are always possible and even probable. Consequently, poststructuralist ideas not only expanded the analytic process of critical inquiry, that is, the taking apart of a phenomenon in order to understand its sociohistorical construction, but also the possibilities of social agency.

Critical pedagogy emerged out of all of these theoretical developments, among others. As the educational arm of critical social theory, it has historically grasped at understanding and responding to oppression, especially as it manifests in formal schooling. The Brazilian adult educator Paulo Freire (1921–1997) has been the most widely recognized and influential theorist and practitioner of critical pedagogy. Freire is perhaps best known for his literacy work in the decolonization process in a number of countries in Latin America, Africa, and Asia, and for his first of many books, *Pedagogy of the Oppressed*, a theoretical guide to revolution published in 1970.

Born in Recife, Brazil, Freire was profoundly influenced by the aforementioned theoretical illuminations and, in addition, the philosophy put forth by George Hegel (1770–1831)—also a major influence on Marx and the Frankfurt School of thought. Hegel’s philosophy works to make reality transparent through the exploration of the interconnecting and contradicting relationships that constitute a particular phenomenon (e.g., an analysis of ‘oppressor’ and ‘oppressed’ holds both opposing concepts together to see how they interconnect and play off each other). Freire was also interested in the phenomenology of Edmund Husserl (1859–1938) that presented questions about the essence of human actions and motives, the sociological and psychoanalytic work of Eric Fromm (1900–1980), and the neo-Marxist ideas of Louis Althusser (1918–1990) and George Lucaks (1885–1971). He was also drawn to the existentialism (in particular the idea that humans can define

and take control of their own lives) of Jean-Paul Sartre (1905–1980), and the insights on popular revolution of Vladimir Lenin (1870–1924), Rosa Luxemburg (1870–1919), and Che Guevara (1928–1967). Furthermore, Freire was impressed and motivated by progressive Christian intellectuals, in particular: Jacques Maritain (1882–1973) and his view of knowledge analysis and liberal Christian humanism, the critical voice of Georges Bernanos (1888–1948), the Christian existentialism of Gabriel Marcel (1889–1973), the call of Emmanuel Mounier (1905–1950) for people to take an active role in history, the religious socialism of Reinhold Niebuhr (1892–1971), and the integrative spirit of Dr. Martin Luther King, Jr. (1929–1968).

Spiritually grounded, Freire also maintained reciprocity with Liberation Theology, which emerged in the 1960s out of the economic, political, and military turmoil in Latin America. Gustavo Gutierrez (1928–), the movement’s leading voice, has worked to embrace the idea of a compassionate rather than vengeful God and to answer the divine call to learn from and help the poor and oppressed (Gutierrez 1970). Influenced by critical theory, ecological ethics, and Feminist, Black, and Minjung Theologies, religious practice in this sense includes taking a political stance and opposing the exploitation and tyranny of market forces, thus forging a profound link between Christianity and socialism.

While holding a degree in law, Freire chose to pursue a career in education in Brazil. In the early years, he taught Portuguese in a secondary school, but he soon began to develop, in coordination with the progressive, reform-minded government, adult education, critical literacy classes and programs for the rural poor in his country. Arguing that education is inherently political as it is a site where values, beliefs, and meaning are struggled over, Freire’s model of critical literacy encouraged examination of unequal property relations, the exploitation of labor, and the concomitant class divisions and conflicts that reveal different economic, political, and cultural interests in Brazilian society. For Freire, these structural conditions need to be explored if much of the lived experience of students is to be understood and transformed. But literacy of this sort, he argued, has to begin with where people are and critical pedagogy thus uses generative themes and codes—that is, areas of interest and objects from people’s actual lives

(e.g., a picture of their home in the ghetto)—to begin the journey to becoming literate, politically active, and transformative agents. Needless to say, the idea (let alone the reality) of bringing critical literacy to the oppressed so that they may learn to read and write, develop a public voice, and actively insert themselves into the local and national political process did not go over well with the elite economic powers in the country.

After a military coup in 1964, backed by the United States, Freire was arrested and incarcerated for seventy days for being a “subversive”—that is, for his work with the poor. He was forced to flee Brazil and went to Bolivia for a brief stay, and then on to Chile where he lived for five years working with the government’s adult education program. As a direct consequence of this Freirian-based literacy campaign, Chile was widely recognized, including by the United Nations, for its successes in combating illiteracy.

While the theoretical grounding and implications of Freire’s practices are profound, at the foundation of such work is the conviction that a critical, multicultural democracy should be the driving force in the struggle for freedom. For Freire, conscientization, a sense of history, praxis, and dialogue are central to any such struggle.

Conscientization (i.e., critical consciousness) is the ability to analyze, problematize (pose questions), and affect the sociopolitical, economic, cultural, institutional, and structural realities that shape people’s lives. Achieving this level of consciousness and ability to demystify social reality, according to Freire, requires that people place themselves in history—the assumption being that individuals are never independent of the social and historical forces that surround them as they all inherit beliefs, values, and thus ideologies. In order to be active subjects rather than passive objects that are acted upon, manipulated, and controlled, Freire held that literacy needs to work in a way that helps people read the social world around and within them in order to understand their predicaments, and to deconstruct the meaning on the page and compare it with what’s actually happening in the world so as to avoid ideological manipulation and indoctrination—what he and Donaldo Macedo (Freire and Macedo 1987) have referred to as “reading the word and the world.”

But developing critical consciousness is not just intended for students. First and foremost, any criti-

cal practice includes self-actualization among the teachers themselves. Critical pedagogy calls for educators to examine the ideological posture that they maintain and how it influences the ways that they perceive students and act in the classroom. Teachers are encouraged to compare their values, beliefs, and assumptions with those of the dominant society to see how they may be reproducing discriminatory and exclusionary practices where they work, and in response develop counter-hegemonic strategies that are essential to democratizing schools and ensuring the intellectual growth of all students.

For Freire, the process of self- and social transformation requires praxis. Praxis refers to the ongoing relationship between theoretical understanding and critique of society and action that seeks to transform individuals and their environments. Theory, in this sense, is how people interpret, critique, and draw generalizations about why the social world functions the way it does. From this working definition, theory is the ability to make sense of all levels of the everyday—that is, the *why* and *how* of what has been happening in peoples lives, and not simply a focus on *what* is occurring and how to effectively respond. However, theory for critical pedagogues is understood as being strategic, performative, and directed towards solving important pressing economic, social, and political problems. Arguing that individuals cannot change a given situation simply through awareness or the best of intentions, or through unguided action, Freire contends that people, as active subjects, must continuously move from action to reflection and from reflection upon action to a new action.

Embracing this type of praxis presupposes a reconceptualization of classroom pedagogy. The term pedagogy refers to how people learn what they learn and under what conditions. It is concerned with what is taught (i.e., the curriculum), but more importantly, how it is taught. Critical pedagogy works to reformulate the traditional role of teacher and student in the classroom. Teachers who work within the traditional paradigm, with its model of teacher as knower and students as passive recipients of information, inevitably reproduce and maintain particular forms of identity, meaning, authority, and interaction, often unconsciously. Freire was adamantly against the “banking” model of education, which occurs when teachers perceive students as empty containers that need to be filled with pre-established bodies of

knowledge. In place of this banking model, he offered a problem-posing approach in which students and teachers contextualize and analyze knowledge and its sociohistorical construction. Rejecting the traditional authoritarian role of the teacher, he insisted on creating self-empowering conditions where students take control of their own learning and become knowledge producers rather than uncritical reproducers of existing discourse. To do this, Freire contended that teachers need to become learners, and students need to take the role of teachers so that educators can effectively discover who their students are, what they bring to the learning process, and subsequently what needs to be taught and how.

Freire, who deeply believed that any participatory democracy and critical classroom has to be dialogical, argued that dialogue is not simply another word for a mere conversation among people about everyday matters. Rather, dialogue requires theorizing social reality. At its heart, this type of interactive and theoretical practice is encouraged to facilitate critical discussion and analysis of knowledge and experience that can lead to social awareness, debates over organizational strategies, political innovations, coalition building, and mass citizen actions capable of working towards eradicating oppressive economic, political, and cultural institutions and structures, identities, social practices, public policies, and governments.

Freire's ideas once again played out on the world stage in Nicaragua's struggle for freedom from the dictator Anastasio Somoza, who was eventually overthrown in 1979. The Freirian-based literacy campaign, with its roots in Marxist class analysis, the theoretical forces of anti-imperialist, revolutionary Augusto Sandino (1895–1934), and Liberation Theology, augmented the country's literacy rate from 50 to 90 percent among the general population, and dramatically increased the people's active political participation in public life. This democratic social movement was something that the Reagan administration, with its neoliberal agenda in the 1980s, could not tolerate and it provided the impetus for the U.S. government's Contra-war that was dead set on crushing the Sandinistas that had removed Somoza and won the vote of the people to govern.

Internationally, critical pedagogy steadily began to expand beyond the site of adult education and made its way, though marginally, into K–12 public

schooling, university life, and many other learning environments. Critical literacy also evolved from being a course on learning to read and write to a philosophy intended to inform all educational experiences and engagements with knowledge. Irrespective of the subject matter, the question posed by critical pedagogues remains: Whose values, interpretations, interests, and goals are embedded in the information learners are exposed to and the institutions they inhabit?

The theoretical scope of critical pedagogy also continued to widen. In part this was motivated by the fact that many theorists, educators, and activists were challenging Marxist ideas and the limits of a predominantly class-based approach to critical education. From a post-Marxist perspective, it is argued that such a position disregards the complexities of other interconnecting battles over identity and meaning (Laclau and Mouffe 2001). Influenced by civil rights movements, postmodern theory's expansion of poststructuralist ideas, centered around context and identity (Hutcheon and Natoli 1993), multiculturalism (Goldberg 1995), feminist theory and pedagogy (Meyers 1997; Nicholson 1997), critical race theory (Essed and Goldberg 2001), and queer theory (Abelove, Barale, and Halperin 1993). The foci of critical pedagogy were extended to explicitly include issues of race, gender, ethnicity, nationality, health, religion, language, sexuality, age, and globalization. The word "explicitly" is used here because Freire's work was always concerned with ridding the world of oppression in its many forms, but class analysis was at the forefront of his efforts; especially in his early writings.

Guided by a more elaborated anti-essentialist conception of identity (essentialism embraces a homogenizing view in which categories such as race and gender become gross generalizations about, and single-cause explanations for, individual character), there was renewed recognition of intergroup relations, but also a realization of, and concern for, intragroup diversity and difference. This has major implications for educational practice as such analysis takes into account the specificities and area-specific conditions and experiences that generate different concerns (e.g., women from various world regions frame their predicaments and responses in different ways). However, while difference is acknowledged and respected, there is nonetheless a

movement to formulate more inclusive and effective democratizing networks. Calling for developing alliances across issues and interests, critical pedagogy heartens working towards global coalitions of struggle.

What is important to recognize is that critical pedagogy is not its own universal theory or methodology that transfers neatly from one situation to another. Nor is it meant to be the imposition of a particular ideology. It is an interdisciplinary process that changes—or as Freire often referred to it, is reinvented rather than used as a recipe—with each unique social/classroom context.

As part of its expanding interests, critical pedagogy is increasingly concerned with how pedagogy does not simply take place in formal educational settings and consequently has extended its analyses into the terrain of media, popular culture, and representational politics (that is, who has the power to articulate experience, fashion identities, define the nature of problems, and legitimate solutions). This movement was influenced by the voices of the Frankfurt School and their analysis of what has been referred to as the “culture industry,” and the work of Walter Benjamin (1892–1940). Critical pedagogues also appropriated a great deal of insight from the 1960s political ethos of the Centre for Contemporary Cultural Studies at the University of Birmingham, England (popularly known as the Birmingham School), and the scholars and activists who found refuge there, such as Raymond Williams (1921–1988) and Stuart Hall (1932–). Their constructivist theories—also arguing that reality is socially constructed and thus possible to change—have been primarily occupied with how meaning is produced, circulated, legitimated, and consumed in popular culture.

Tapping cultural studies (Grossberg, Nelson, and Treichler 1991) and postcolonial theory (Ashcroft, Griffiths, and Tiffin 1995), critical educators have been addressing how oppression not only consists of a structural reality built on political and economic processes and relationships, but also relies on symbolic systems to shape the kinds of meaning, identity, desire, and subjectivity that can work to ensure the maintenance of what Gramsci referred to as the hegemony of “common sense” and consent. A full analysis of these symbolic systems includes understanding that the language and images of television,

advertising, radio, print journalism, music, film, and so on, are ideological and formative, rather than merely vehicles for expression or for reflecting reality. Such media are often the conduits through which dominant values and beliefs that work to shape how people see, interpret, and act as socialized and political beings, can be promoted. As an extension of critical pedagogy, critical media literacy encourages theorizing about how popular culture shapes people’s sense of political agency and mediates the relations between everyday struggles and structures of power. The central idea is to get people to not only think about culture politically, but also to think about politics culturally.

The roots of critical pedagogy grew deeper in the United States from the 1980s onward, fed by influential educators such as Miles Horton, Stanley Aronowitz, Henry Giroux, bell hooks, Peter McLaren, Michael Apple, Antonia Darder, and Doug Kellner. They, among many other important figures, have used a critical pedagogical framework to expose Eurocentric curricula in public schools and universities, the harsh and subtle discriminatory conditions that so many students face, and the institutional and everyday constraints that are placed on critical, participatory, democratic life. As part of this critique, they have interrogated how traditional conservative models that dominate mainstream educational programs, which narrowly conceptualize teaching and learning as a discrete and scientific undertaking, embrace depersonalized methods for educating students that often translate into the regulation and standardization of teacher practices and curricula. Critical pedagogues argue that this pedagogical model, which focuses exclusively on preparing students for semi-skilled employment in a now postindustrial society—one that relies on service industries, knowledge production, and information technology rather than industrial manufacturing to generate capital—abstracts education from the challenges of developing a conscious, socially responsible, and politically active student body and citizenry. As such, the larger historical, ideological, economic, and cultural conditions out of which today’s social and institutional crises have grown generally go unquestioned. It is this lack of inquiry, analysis, and agency that a critical philosophy of learning and teaching hopes to reverse.

Critical educators in the United States not only

embrace the postmodern denial of objective inquiry, universal reason, and absolute truth that informs the standardization movement, but they also advance beyond mainstream multicultural education's relativistic affirmation of diversity and into critical analysis of culture and identity. Rather than reduce culture to ahistorical and depoliticized notions of everyday life, critical pedagogy recognizes culture as a terrain of lived experiences and institutional forms organized around diverse elements of pleasure, struggle, and domination—a space that constantly needs to be explored, engaged for its strengths and weaknesses, and renewed.

Critical pedagogy has maintained a theoretical and practical flexibility that safeguards it from imploding into a mechanistic, deterministic movement. The goal has always been to interrogate dominant discourses, confront the oppressive values and beliefs that have come to inform mainstream sociocultural practices, and continuously forge and work to secure economic and political rights within the endless antagonisms that feed the ongoing democratic process.

Pepi Leistyna

CONCEPTIONS OF EQUITY

When speaking or writing about educational equity, researchers, policymakers, and school personnel are usually attending to some combination of the forms of social diversity as found in the nation's schools and districts: that is, gender, ethnicity, race, social class, and language. Typically, such diversity is related to low student achievement on tests, grades, and school attendance. Also, student diversity can be related to differential student opportunity to learn and interventions intended to ameliorate such differences. Often overlooked in much of the literature is that educational policy at all levels, in programs as well as in school and individual practices, are both outcomes of and supporters of deeply held values and beliefs about how one *should* respond to inequality that is related to students' demographic characteristics. These beliefs, values, and associated practices are what is meant by the term "conceptions of equity."

AN EXAMPLE

Consider the following scenario, woven out of my years of working with schools that try to improve instruction for their diverse student populations: School personnel meet to discuss results on the state-mandated assessment. They realize that, once again, the school's low-achieving students tend to be English language learners (ELL) and English-speakers who qualify for free lunch. And, they discuss how the students' performance will affect the school.

While everyone expresses a commitment that *all* students receive an equitable education and the best instruction available, competing beliefs surface among the staff. Some teachers feel that the school's English language learners must learn English *before* they can participate in the school's nascent science program; hence, they argue for reserving the program for its more capable English-speaking students. Others claim that the program's project-based science can develop the students' skills in reading, English language arts, and mathematics; hence, it should be adapted to include ELL students. Still others argue for shifting all content instruction to the school's specialists in teaching ELL students thereby freeing up the regular classroom teachers to teach to the best of their abilities.

Staff also worry about competing policy directives. Bilingual education or sheltered-instruction programs might provide students the opportunities to engage in subjects that require a lot of language without forcing them to compete with their more English-proficient peers, but such programs seem to segregate students.

School personnel voice concerns that the school's low-achieving students might force them to water down their academic programs. The district's standards-based programs lend themselves to combining basic skills instruction with applications, projects, and reading real texts. Will the school's ELL and low-SES students fail in a program that is so heavily dependent on oral language, reading, writing, and student initiative? One teacher notes that small-group time is a favorite among low achievers because they spend so much of it off-task and socializing. Recalling how she had been raised to defer to her teachers for all knowledge in the classroom, another staff member frets about traumatizing students who are not used to the give-and-take that form the essence of the school's standards-based programs.

Everyone agrees that the state tests fail to show the quality of the school's many programs, how hard teachers are trying to teach students, and what students actually can do. Teachers feel pressured to give up valuable class time in order to prepare students to take these tests. All agree that, regardless of their objections, the test results carry great weight in the district, parents are very concerned, and the school needs to do something to raise everyone's achievement. The meeting ends with everyone slightly frustrated at not having solved the problem, but also quite relieved to have finally gotten so many of their concerns out on the table and to start making progress in addressing these issues.

As illustrated above, beliefs about equity surface when people discuss what *should* be done in light of low achievement. For example, beliefs that ELL students need to master English before they can learn content could support a move to providing bilingual or sheltered English instruction or to limiting standards-based instruction to English-proficient students while their ELL peers receive additional English-language training. Yet in light of concerns about student segregation, beliefs that students must master English first could stifle high-quality teaching for all of the school's students.

WHAT IS EQUITY?

Each person above favors equity. No participant would argue against helping their school's low-achieving students do better. What many participants do not realize, however, is that they all hold different beliefs about equity that guide and support what they do in their efforts. In turn, each individual's beliefs about what constitutes equity is supported and challenged by the results of instructional practices, by the school's policies, and by its shared values and dominant ways of thinking and acting.

People who work in the area of educational equity often have major disagreements among themselves concerning goals, the actions that should be taken in achieving those goals, and even the meanings that they attach to the term equity. As a result, they often recommend and take actions that undercut each other, if not work directly at contradictory goals.

There are many different conceptions of what it means to strive for and to achieve equity. Multiple, competing, and even contradictory conceptions can be held by individuals, groups of people, and even

by the same individual. Different conceptions come to the fore depending on the situation that someone faces. What is more, people's efforts to achieve equity are closely tied to the meanings that the term evokes. The following provides an overview for some of the major conceptions of equity, such as caring, socially enlightened self-interest, social justice, equality, representational participation, and as opposed to excellence (or quality).

CARING

As Nel Noddings notes, teaching is a caring profession (1988). Caring—as is the case for all equity meanings—should not be thought of as an either/or choice. That is, it is not the case that someone cares or does not. Nor is it easy to think of someone being committed to equity without also caring about people: Why would someone who does not care about or actively dislikes students of a particular background worry about equity for those students?

The stereotypical secondary teacher who teaches content and does not worry about students' self-concept or feelings is often portrayed as inimical to equity. The lack of caring about students would seem at the base of such a charge.

Many teachers respond to children's real-world situations with empathy and with feelings of nurturance. Think of the staff member, above, who recalled her deferential treatment of her own teachers and her concern about causing trauma to students.

At an extreme of caring are teachers who avoid all risk of adding trauma to their children's lives. Such people seem to believe that some students face such challenging everyday lives that the academic (or other) demands of formal schooling might prove too much for them to handle. Hence, the goal of schooling should be to provide a safe haven for such students. If one visits these schools and such teacher's classrooms, they are very safe places emotionally.

Hence, caring about students' emotional and social well-being could result in an overly protective environment where students are not challenged to use their minds, to think, and to respond critically. Children would fail to learn very much in such settings. Caring was used to deny students opportunity to learn.

On the other hand, caring could be used to motivate proactive interventions. Successful teachers care that their students learn to use their minds. Their

caring for their students extends beyond the social and emotional to include the intellectual. They challenge their students and support their students in meeting those challenges. The media's image of Jaime Escalante's instructional methods, the Latino teacher portrayed in the film, *Stand and Deliver*, who helps his Latino students to pass an advance placement calculus test to the amazement of the test officials, is tied as much to his passionate caring for his students' success (as seen in how he exhorted them to succeed) as it is to any particular instructional strategies that he may have used.

SOCIALLY ENLIGHTENED SELF-INTEREST

When equity is portrayed as a form of socially enlightened self-interest, people argue that all students need to achieve because it is in society's self-interest that they do so. Education is an investment in the development of future adults' intellectual competence and in the socialization of people into the common language and norms of a society. Education is an investment so that future adults will vote intelligently, work in well-paying jobs, and serve in an increasingly technically demanding military. Underachievement is a threat to this investment since undereducated citizens do not have the necessary social networks, nor the proper knowledge, skills, and dispositions to participate fully in society.

Equity as socially enlightened self-interest can be traced to four developments. First, American society has been undergoing a dramatic shift so that the American school-age population is more ethnically and linguistically diverse (in both absolute numbers and proportional makeup) than at any other time in its history. Second, this growth has been in those groups of students who have been—and continue to be—undereducated relative to their peers. Third, the requirement for a highly educated, technically skilled, and socially adept populace has been accelerating and has placed additional pressures on the educational system to increase its academic and social demands on students. Fourth, failure to educate students who in the past were written off—such as the poor, non-white ethnics, non-English-speaking students—presents threats to the political, economic, social, and military fabrics of American society.

Concerns about America's changing demograph-

ics and its economic, military, and development needs often are expressed by business and the military. They provide rationales as regards equity that are very compelling to federal and state legislatures, educational agencies at all levels, and the general public. Professional organizations have invoked self-interest as a reason for justifying reforms and efforts for ensuring that all students are better taught.

In the above vignette, school staff who feel pressure to raise the accomplishments of their low-achieving students and act accordingly might be motivated by enlightened self interest; it is in the school's best interests for its students to improve. Additionally, staff who take to heart exhortations to increase the number of literate adults because it benefits the larger society are responding on behalf of society's self interests.

Socially enlightened self-interest need not always be altruistic. There are other solutions to the need for a highly educated citizenry. Business can seek a well-educated work force from other sources. American immigration policy has been reformed to allow (if not to encourage) the immigration of highly educated people from other countries, especially people with technical skills. While society takes steps to educate everyone, it also hedges its bets by ensuring a steady supply of such individuals through other vehicles.

SOCIAL JUSTICE

When people use the term "equity" in everyday parlance, they often mean that something is fair as in the expression "fair and equitable." What is inequitable is, thus, unfair.

The general treatment of America's first peoples, slaves, women, poor, original Latino/a settlers of California, Texas, and the Southwest, and of other groups provides, at best, a mixed history. The historical denial of educational opportunity is but one in a long list of injustices that have been visited on the original members of these groups and their descendants. Depending on one's stance about American history, equity demands some forms of specialized opportunity as a means of (1) compensating for the larger social injustices visited on members of these groups (such as segregated housing, unacceptably low job opportunities, poor health care, discrimination in voting and other forms of social participation);

(2) compensating for the more-narrowly defined denial of educational opportunity; and/or (3) dismantling the social structures that continue to impact on the lives of members of these groups.

In addition to thinking about equity in terms of compensating people for unfair (or unjust) treatment, equity also provides a rationale for taking action that avoids something that might be unfair. While compensation often comes after the fact, avoidance focuses on “before.”

For example, school personnel might argue that the outcome of not teaching English language learners in mainstream settings would be unfair since these students’ later-life employment opportunities would become limited to low-paying fields through no fault of their own. In some cases, school personnel might find that certain practices—for example, not allowing students to take courses because they did not speak “adequate” English—were school-based barriers to student’s learning. Appeals to equity as social justice could motivate removing barriers and taking action to help students who had been denied the opportunity to learn so that they can catch up to their peers.

Alternatively, a school’s staff might determine that something that they were planning on doing would severely curtail, if not totally eliminate, opportunities for students to learn. Equity as social justice could motivate efforts that would stop such a policy from taking place.

Current-day educational practices that are hotly debated as being unfair include tracking, high-stakes testing, and other procedures that have impacts on the life chances of students. Insofar as ideas of social justice evolve and change, people’s standards for educational equity will also evolve and change.

Schools are pressured by interest groups who advocate for programs and specialized services for their children as a matter of fairness. Parents of children who are usually successful in conventional programs might argue that a switch to a standards-based program is unfair to their children because it disadvantages them relative to others. Parents of low-achieving students might object to a program for similar reasons. School personnel might ask how fair it is to place ELL students in a science program that depends heavily on competence in English.

On the other hand, school personnel could argue

in favor of changing the school’s curriculum and materials on grounds that a conventional program has unfairly penalized low-achieving students. Tracking and other ability-grouping systems are said to unfairly limit the quality of instruction that students who are at the very bottom tracks receive. Hence, detracking and alternative instructional strategies would become matters of social justice.

Ideas of social justice always bubble beneath the surface in meetings such as the above. A great deal of mutual trust and the development of a safe working environment are necessary before teachers and other school personnel are willing to risk the kinds of arguments and misunderstandings that come about when people try to make clear their ideas of what is fair and what is not. Such conversations become even more difficult when school staff represent various ethnic groups.

EQUALITY

Until the recent past, most non-American writers have tended to write about equality and inequality, not about equity, as it applies to groups. These writers are interested in whether or not differences can be found among groups based on social-demographic characteristics such as gender, race, ethnicity, social class, and language proficiency. Most reports that find differences in achievement focus on differences among these groups.

Educators and policymakers are rightly interested in whether learning, achievement, and persistence in course taking are distributed among this nation’s socially identifiable groups. If between-group differences are found, then they try to understand how those differences came to be, other relevant characteristics, and what might be done to diminish them.

Two points are worth remembering when thinking about group-based differences. First, “equality” and “inequality” are not based on the individual case. These terms have statistical meanings that are based on groups and on their compositions as social constructions. As a colleague of mine once said, these groups may be socially constructed, but consequences of membership are no less real for their members.

A second point is that not all inequalities are unfair. In other words, it is possible to do inequality-based research without worrying about equity. People vary in height, weight, skin and eye color, and other

traits; inequality on these traits need not always be a matter of social justice or fairness. At a minimum, there would have to be some evidence that social mechanisms are creating those inequalities. Also, there would need to be some additional criteria for arguing that, even in the presence of social mechanisms, a particular inequality among groups is inequitable. For example, all other things being equal, schools spend proportionally more money educating students with physical disabilities than they do in educating children without those disabilities; I know of no one who would claim that such an inequality (in expenditures) is inequitable. To the best of my knowledge, the explicit determination of criteria by which an inequality can be called unfair has not been deeply considered in the literature on equity in education.

In the vignette above, the fact that the school's English language learners—as a group—perform less well than its English-proficient population has given rise to concerns about how well the school's new science program will serve their needs. That attention has been called to these group-based differences could also create the felt need, within the school, to determine the mechanisms by which they occur. As also evidenced above, school personnel propose many different possible mechanisms. Once their attention has been called to such group differences, the next challenge for most schools is to develop means to resolve them. In the vignette above, for example, school personnel suggested that one possible explanation was the test's failure to align with their intents and efforts. The next step would be to review the test's content emphases and to see how well they matched what was being taught. Also, someone might consider how well the school's curricular tasks and the tasks' requirements for good and/or right answers align with the tasks found on the test. Once school personnel had developed some agreement about what is blocking their ELL students' learning, they could then take steps to overcome that interference. Similar efforts could be taken in the case of other purported mechanisms.

REPRESENTATION

How women, people of color, and members of other underrepresented groups are portrayed and whether

or not they appear in a wide range of social settings (for example, committees working on the development of policy), positions of authority, and media representations (for example, pictures in books, movies, and television shows) has become a matter of equity. In this conception of equity, people worry about the perpetuation of stereotypes through the absence or through the active construction of images, behaviors, and traits that link members of different social groups to antisocial or pro-social settings.

A common criticism of American school texts is that although females are now presented in jobs and roles that were previously reserved for males, males are not portrayed in nontraditional roles. Another common criticism of television and movies is that minorities are often relegated to secondary roles, portrayed in negative ways, and stereotypically treated. In its *Brown vs. Board of Education* decision, the United States Supreme Court's famous footnote 11 cited studies that demonstrated how the lack of role models for success—that is, the nonrepresentation of African American success—was detrimental to children's psychological well being. On these grounds, the Court rejected earlier decisions by its predecessors accepting the practice of segregation.

People who view equity as a matter of representation often demand democratic participation by members of underrepresented groups on committees. Their reasoning is that these individuals will serve as the voice of the group on those committees and help to ensure that their group's interests are protected.

Consider the vignette above. If teachers of ELL students or meeting participants did not include representatives of the same ethnic backgrounds as students, the committee's ability to represent the concerns and interests of such students would have been open to criticism. Likewise, a committee reviewing curriculum materials to be used in the school would likely look for examples of successful male and female scientists from a range of ethnic and social backgrounds. They would try to ensure that the interests of their diverse students, including the English language learners, were represented in those materials. And they would try to ensure that the settings did not create or reinforce stereotypes of populations.

Representation-based efforts can result in the cre-

ation of different kinds of stereotypes. In efforts to represent different groups and to incorporate content that may interest students from such groups, curriculum developers will sometimes water down the content so that, for instance, a difficult idea gets treated in a superficial manner. Both student interest and understanding suffer. People's accomplishments might be mentioned in passing or their accomplishments might be misrepresented because the materials failed to take the needed time to develop things more fully. Finally in the name of representation, curricular materials will often use stereotypical names—such as Maria or Jawan—and physical features exclusively in order to signal a student's race or ethnicity, thereby ignoring that names like Michael (Jordan), Jennifer (Lopez), Kristi (Yamaguchi), and Tiger (Woods) are perfectly good names for representing people of diverse ethnic and linguistic backgrounds.

OPPOSED TO EXCELLENCE

Many parents, policymakers, and even school personnel are concerned that efforts to include heretofore excluded students will be done at the expense of rigorous academic standards. Critics of affirmative action and other efforts to achieve equity have asked the rhetorically loaded question as to whether equity is to be found in the direction of watered-down academic standards or in insisting that low-achieving students meet enhanced course-taking requirements for graduation.

Even a cursory reading of reform documents reveals that there are many reasons for modifying school programs, such as the need to cover new content that better reflects recent developments in a field, or the teaching of a subject so as to be developmentally appropriate, or the shifting of instruction from a focus on rote memorization to a focus on understanding basic principles, or the teaching of a subject so that it better mirrors how that academic discipline actually is practiced. Regardless of these reasons, when someone proposes that an additional reason for modifying a program might be to increase the participation of a school's low achievers, people begin to worry about watered down curriculum.

In the above vignette, when school staff expressed concerns about sacrificing rigor or watering down

the content, they were expressing fears that equity might be opposed to excellence. Another way of thinking about equity would be to argue that equity means both: maintaining rigorous standards and ensuring access to that content for all students.

When I first began work in this field nearly two decades ago, I thought that equity could easily be tied to ideas of social justice. Over the years, I have come to realize that equity cannot be reduced to any single dimension. First of all, a reductionist stance can place someone in an untenable position. For example, if equity is simply a matter of equality, one way of achieving it is to deny a particular good (for example, access to a particular course) to everyone; yet I certainly would not accept such a solution. Secondly, people in education and in the larger society accept different conceptions of equity, often at the same time. If individuals want to make progress in the larger society, then they must consider how their efforts address these multiple conceptions.

That equity cannot (or maybe, should not) be reduced to a single construct does not mean that people cannot strive for some clarity in their own ideas and work. Educators need to better understand the above conceptions and how they interact with each other. For example, the interaction between social justice and equality would seem to be the reason that not all inequality is inequitable. One needs some principled means for deciding if a particular distributive scheme is unfair. Likewise, if there is social agreement that how something is distributed is a matter of social justice, then equality-based research would need to be carried out in order to determine whether the initial inequity had been corrected.

Finally, notions of equity will continue to change and evolve. As ideas of social justice have changed, so too have ideas of equity. Practices and social arrangements that might seem fair to one generation may become striking (or even, outrageous) exemplars of inequity to later generations—consider, for example, how the voyage of Columbus, the institution of slavery, and the status of women have been reinterpreted over the past decades. Likewise, as new social-demographic groups come into being, as their educational concerns and political demands come to the fore, and as old groups shrink away, the substantive concerns for equity will morph and change.

Walter G. Secada

MULTIRACIAL EXPERIENCES

For 2000, the U.S. Census Bureau created a “check all that apply” measure for race. This was a compromise, for some wanted no change, others a separate multiracial box. Ultimately, the anticipated change was muddled in a controversy revealing how institutionalized certain views of race have become. When increasing numbers of people failed to see themselves reflected in conventional racial groupings, they sought a remedy. The census compromise does not end their search for validation and identity.

With time, race and race mixing have become ever more complex. Throughout American history the products of interracial sexual unions have created a dilemma for the racial system of sorting people into dichotomies, either/or, bipolar schemes. This system has sustained the belief that group membership is exclusive—that each of us for social and political purposes is a member of one *or* another racial group. Historically the term mixed race referred to black-white fusions that were seen as part of a two-tiered system with multiracial people in between, but still black. Trying to create a mixed-racial category in the census is an attempt to move away from the either/or nature of racial group membership, and codify the experience that many people are simultaneous members of multiple racial groups (Thornton 2004). However, the group they attempt to codify is extremely diverse.

The complexity of race mixing in the United States can be seen in the 2000 Census data (American Demographics 2002). Despite a belief that the new format would siphon members away from the traditional racial categories and as such dilute their power, only 2.4 percent of Americans identified themselves as having a multiple racial heritage. Of that number, 93.3 percent identified themselves as biracial. The largest group of multiracials (32.3 percent) was white and “some other race,” which is most likely Latino/white, followed by American Indian (15.9 percent of all multiracials), Asian/white (12.7 percent), black/white (11.5 percent), and some other race/black (6.1 percent). Other groupings, such as Asian/some other race and black/American Indian appear much less often. About 72 percent of those identifying a multiple heritage claim partial white ancestry.

Multiracials cluster along the west coast (e.g., California, Nevada, Washington), the southwest (e.g.,

Texas, Oklahoma, Arizona) and New York. They appear most often in cities such as Oakland, Sacramento, Los Angeles, San Francisco, Riverside, and San Jose, all in California. About 4.6 percent of all multiracials live in New York City, and 3 percent to 4 percent live in places like Las Vegas, Oklahoma City, Miami, San Antonio, and Denver. The majority are 24 years of age or younger, most being 5 to 24, followed by those who are 35–54 years of age.

While these data provides us with a contour of multiracial American life, it is much more difficult to describe the quality and the specifics of their lives. This is in part due to several time lags: research had until the 1980s highlighted black/white mixes, supplanted by a recent focus on Asian/white mixes, all of which typically investigate ethnic identity to the exclusion of mundane aspects of life, such as being a sister, a parent, from a working class background, and so on. Because most popular discussions fixate on white/other combinations, we also know little about people who identify with more than two racial groups or about minority/minority mixes.

MULTIRACIAL IDENTITY AND DEVELOPMENT

In part because multiracial people remain relatively uncommon, attention focuses on comparing them to the mainstream, particularly their identity. Research on multiracials suggests that they have a different flavor to their lives when compared to so-called monoracial people (Nakashima 1996; Newsome 2001; Thornton 1983; Root 1996; Harris and Sim 2002). While with whom multiracials identify spans a range of possibilities (Gillem, Kohn, and Throne 2001; Rockquemore and Brunsma 2002), a still-popular presumption is that they are a population at risk, face special and unique problems, and are socially and geographically isolated (Herring 1995; Piskacek and Golub 1973; Gaskins 1999; Brown 1995; Kerwin and Ponterrotto 1995). Typically, this research examines mental health patients or those linked to social service agencies (e.g., Gibbs and Moskowitz-Sweet 1991; McKelvey, Mao, and Webb 1993).

Even so, some analyses of nationally representative survey data find significant mental health differences between multiracial and monoracial adolescents, although it is unclear if multiple heritage is the specific reason for the difference. S. Milan

and M. K. Keiley (2000) found that racial minorities and multiracial adolescents reported far higher levels of depression than did their majority counterparts. In contrast, T. Cooney and M. Radina (2000) note higher rates of depression only among multiracial and monoracial minority females. J. R. Udry et al. (2003) learned that mixed-race adolescents are at higher health and behavioral risks than those who are single-raced. White/Asians were notably more likely to consider suicide, be suspended, and repeat a grade. It is of note, however, that Udry et al. found most mixed-race adolescents are at low risk.

Other work suggests that multiple racial heritage may be no more risky than a single one. Cooney and Radina (2000) checked delinquency rates and academic performance and noted no significant differences between multiracials and monoracials. A. Beal et al. (2001) found nothing among seventh graders to distinguish single-raced adolescents from their multiracial counterparts. Others describe more similarities than differences. K. Grove (1991) found comparable identity statuses for Asian American/whites, Asian Americans, and whites. Even so multiracials saw race as less important than did Asian Americans; they struggled with being bicultural and were often unclear where they fit in racially. The nature of this struggle, R. Johnson and C. Nagoshi (1986) found, may vary by gender. Biracial males revealed higher socially desirable traits than other males, while biracial females were more extroverted than monoracial females.

When notable differences arise, they may be attributed to context, and much less clearly to racial status (Jacobs 1992). For example, biracial children often appear in the child welfare system in part because they experience discrimination from extended family members and have mothers expressing mixed feelings about them (Folaron and Hess 1993). Other work reveals that multiracials, compared to their monoracial counterparts, are similar in life stress, self-worth and levels of alienation but have less restrictive mothers. Multiracials having healthy self-esteem may come from families with the most social class and emotional resources (Cauce et al. 1992; Gibbs and Hines 1992; Kerwin et al. 1993).

There is another research tradition (known as the variant approach; see Thornton and Wason 1996) that highlights unique identities, healthy and no less intrinsically valid than any other. Much of this work

is conducted by multiracial researchers or members of multiracial families. Some of it points to multiracials having higher self-esteem when compared to monoracial counterparts (Chang 1974; Field 1996; Phinney and Alipuria 1996). Others point to similar early stages but major differences in the final stages of development (Kich 1992), or that development varies even within specific racial mixtures (Stephan 1992). W. Stephan and C. Stephan (1989, 1991) found that most multiracials identified with several groups, suffered no ill effects, were tolerant of other groups, displayed a language facility, and enjoyed the cultures of the groups that were part of their heritage. M. Thornton and H. Gates (2001) revealed that among black/Japanese, identifying with both parental groups varied along a continuum, from those who were adverse/neutral to both, embraced both, or created a new multiethnic identity.

With increased visibility, examination of multiracial consciousness and identity has expanded tremendously. Still, the discussion remains limited. Since most interest originates in the effects of crossing racial boundaries, not surprisingly, most studies address how multiracials are either different (for good or for bad) or argue that they are like anyone else—ultimately, the essential quality of their lives is seen to embody the good and the bad of race relations. Thus the focus on racial identity, a trend especially among newer work, where the discussion is often a personal one.

Aside from ignoring the more mundane aspects of life (e.g., such as multiracial familial or political attitudes), this literature rarely interrogates the racial meanings that pervade the various racial mixes involved (for exceptions see Williams-Leon and Nakashima 2001; Comas-Diaz 1996; Hall 1980; Williams and Thornton 1998). An important task is to deconstruct multiraciality and examine the meanings that correspond to specific types of racial categories, identities, and mixtures. New work on multiraciality needs to be attentive to the issue of power as deployed in different levels and sites of social life (Omi 2001, ix-x). This includes acknowledging and assessing the power to identify oneself, to define and establish categories, to promote cultural representations and to advance political claims effectively. These all will help us understand the full range of multiracial experiences.

This clarion call to explore “notions of boundary-

creation, boundary-bursting and boundary-expansion” (Houston and Williams 1997, ix), is important, particularly so because the trend thus far has been to recreate the traditional race relations literature in miniature for multiracials: race relations are dichotomous associations between whites and others in this literature, between whites and Asian Americans or blacks. The literature fails to recognize multiracial households created by nonwhite counterparts. We need to move beyond black/white and Asian/white. When speaking of Asian Americans, for example, Y. Espiritu notes, “It is . . . critical to move beyond the ‘white-yellow’ axis and recognize the multiracial households created by Asians and their ‘non-white’ partners” (2001, 26). We have ignored this kind of dimension because the minority/minority divide does not threaten the border between whites and nonwhites (Root 1992).

The trend to highlight white/Asian American mixes, and ignore Asian American/minority issues is also related to biases within Asian American communities. Paul Spickard suggests, “Upholding the myth of ethnic and racial purity, the Asian American community has been as guilty ‘of stereotyping and oppressing, of mythologizing and dominating’ Asian-descent multiracials as has white America” (1997, 45). Although the exclusion of multiracial Asians is often couched in racial terms, their treatment has not been uniform but instead varies according to the racial derivation, class background, and gender of the multiracial person. Replicating the hierarchical American racial system, Asian American groups are least accepting of Asian-descent multiracials who are of African heritage. As Houston and Williams (1997, vii) state, the product of the interracial union is “considered even more frightening if its multiracial composition includes African ancestry.” As Espiritu writes in a different way, “this hostility toward Afro-Asians reproduces U.S. racial rankings that place African Americans—and therefore multiracials of African heritage—at the bottom of the social scale” (2001, 28). Paul Spickard (1997, 55) contends that only in rare instances of famous achievements “are Asian communities willing to treat mixed people of African American parentage as insiders” (e.g., Tiger Woods).

While I have highlighted the need to interrogate multiracial experiences along multiple dimensions of race, there remain other important aspects to the lived experiences among multiracials that are ignored, such

as the roles of social class and gender. Until research begins to reflect the full range of multiracial experiences, our vision will remain myopic and driven by political and social agendas that say more about us as a society than about multiracials as living and breathing beings.

The process of developing an identity is complex for multiracial youth, especially since there is no single multiracial identity. Finding a personal and family identity that represents their own attitudes about being of multiple ethnic/racial heritage is complicated by social forces which push them to identify with one group and even preference one over another race. In a real sense, they have many options, yet they are rarely encouraged to embrace them all. For educators, counselors, and others concerned with their welfare, learning about and respecting the beliefs, attitudes, and concerns of multiracial families is crucial. Paramount in this is an understanding that there is no one right answer to identity. We must support them in exploring the full sense of who they are and want to be. Only in this way may we help them understand how race is only one small aspect of who they are. We as a society are the problem, for we have only begun to appreciate the notion that we are all multiracial in a biological sense; we remain fixated on seeing the world as black *or* white *or* Asian *or* . . . fill in the blank.

Michael C. Thornton

HOME AND SCHOOL RELATIONS

This entry summarizes the history of and contemporary emphasis on home-community and school relations, with special focus on parent participation or involvement. Such participation is now widely considered an essential and necessary element in any school reform or improvement effort, particularly in relation to increased student achievement and success (Hidalgo, Siu, and Epstein 2004). The literature connecting parent involvement to student achievement is extensive, and will not be reviewed here (see, e.g., Desimone 1999). Suffice it to say that different types of parent-school involvement have been associated with increased student achievement. However, as Desimone points out, “despite the sizable amount

of research relating different types of parent involvement to student achievement, we do not have a clear understanding of how patterns and effects of parent involvement differ across racial-ethnic and income groups” (p. 13).

J. L. Epstein et al. (2002), for example, outline six types of involvement, including improving the “school readiness” of children by providing information on homework policies, teaching parents how to help their children learn school-related skills at home, and incorporating parents as volunteers into organizations that support the school, all projected to enhance the children’s school performance, regardless of family background characteristics. Along similar lines, recent legislation, such as the *No Child Left Behind Act*, conditions funding under Title I of the Elementary and Secondary Education Act (aimed at high-poverty schools) upon whether local education agencies, such as schools or school districts, comply with certain parent involvement requirements. Accordingly, schools must inform parents about their children’s test scores, the schools’ performances on such tests, and create capacities for increased parental participation in the functioning of the schools. A large urban school district, for instance, has responded to these requirements by establishing parent coordinators, staff members whose job it is to help encourage greater parental participation in school matters. These new staff members attend a training program on how to create parent services in the schools. In general, then, schools seem to be welcoming parental involvement (see Carey, Lewis, and Farris 1998), but schools generally maintain the power to determine what counts as participation or involvement.

D. S. Seeley (1993) refers to the approaches to parent involvement over the past 150 years as the delegation model, a view aligned with D. Olson’s (2003) concept of education as bureaucratic institution, delegating the teaching to professional educators and the learning to students, without reference to parental roles in the process. From this perspective, schools remain the defining institutions, creating categories of parental participation, but mostly as supplementary or supportive to the real business of education conducted within classroom walls.

From roughly 1900–20, a period characterized by massive immigration to the United States, parent programs were educational in nature, with the in-

tervention of socializing the new immigrants into this society’s dominant values (Valdés 1996). With increased industrialization, fathers began to work outside the home, moving away from the self-sustenance characteristic of an agrarian society, depending instead on corporate institutions for their livelihoods (Coleman 1987). These factors, along with the establishment of compulsory school attendance, transformed education from primarily a function of the family to an obligation of the public sector.

With the growth of the institution of schooling, children were placed in the hands of strangers responsible for instilling in them societal values and mores as well as knowledge. During World War II, out of necessity, women started working outside of the home, not only as teachers but also in other sectors of the economy. J. S. Coleman (1987) and C. Ascher (1987) argue that this increased dependency on social, non-intimate, institutions correlated with less family investment in children’s education.

Ascher (1987) maps three principal categories of parent involvement from the 1950s through the 1980s. In the 1950s schools mostly relegated parents to maintaining a separate role, remaining outside the school process. They were supposed to help with homework and, as directed by the school, support or facilitate teachers’ and schools’ roles in formally educating their children. Schools expected parents to discipline their children, to provide a moral framework, but not to interfere with the school’s formal education of their children. The broadest definition of parent participation in school-directed activities included parent-teacher associations (PTA) and, later, parent-teacher conferences (but see, Siddle-Walker 1996).

In the sixties and seventies, the federal government also enacted laws that fostered dependency of the disenfranchised and the poor upon social institutions (Coleman 1987). Programs like Head Start and Job Corps enlisted parents and community members as teachers more so than the public school system. Although parent involvement in the seventies evolved into a push for parent advocacy, “neither parent participation nor community control was ever fully realized” (Ascher 1987, 3).

A trend toward parent activism also marked the sixties and seventies. In 1969, for example, the Chicano school walkout grabbed headlines in all major newspapers across the country (Acuña 2000).

Students walked out in response, in their view, to oppressive and unresponsive school policies that discriminated against them on the basis of their race, language, and ethnicity. Parents became embroiled in the conflict between the school board and the students in an attempt to satisfactorily resolve “la huelga” (the strike). Parents participated in sit-ins and sleepover protests at the school board meeting hall. Although successful, the relationship between home and school remained dichotomous and asymmetrical, and the activism was not sustained.

According to Ascher (1987), professional educators in the sixties and seventies resisted parent advisory councils created under Title I. Various factions of parents and professionals formed in opposition to one another, further diluting more effective parent participation. Schools determined what (low-income) parents needed to learn, and set up classes to teach them. During this period, schools organized parenting classes concerning discipline, nutrition, and child rearing. Despite some local control, educators remained in charge of the agenda of schooling, extending the institution’s grip on defining parent involvement.

During the conservative era of the eighties, the U.S. Department of Education reproached the education system in its report, *A Nation at Risk*, which “claimed that education failure was sufficiently acute to jeopardize the standing of the United States in the world and required urgent reforms” (Olson 2003, 13). Ascher (1987) identified the “national concern with the family and the importance of family life” (p. 4) and the criticism that teachers, by themselves, are unable to accomplish important educational goals, as factors reigniting what she calls the parent involvement movement.

This emphasis on parent involvement has continued unabated during the past two decades, as education professionals have come to acknowledge the importance of parent participation in schools. New decisionmaking roles can involve parents as members of site councils, helping to develop school improvement goals, or monitoring school activities and performance. Yet, given the institutionalization of schooling at the district and state levels and the recent implementation of sweeping federal mandates in education, schools continue to define parent participation in generally circumscribed ways. Thus, parent-teacher conferences, PTA participation, and

parent education have remained central to parent involvement efforts.

LANGUAGE, CULTURE, AND CLASS

Ethnic and racial minorities are approaching majority status in several states, primarily in the south-western, border, and bi-coastal states and are already the majority in virtually every urban school district. The growth of English-language learners, mostly immigrant students, also motivates concern for student achievement and family involvement with schools. An important issue is whether cultural differences, often subtle but sometimes marked, represent a barrier to effective communication between teachers and parents, or to school achievement. As several researchers have warned, with little awareness about or first-hand knowledge of families’ experiences and strengths, teachers are likely to rely on popular stereotypes or misconceptions about such families and their children, or consider them passive about their children’s education (Moll and González 2004; Valdés 1996).

For example, a common perception is that low-income parents simply do not value education as much as white, middle-class parents. According to Thompson (2002), educators have often mistaken the lack of African American parents’ visible participation in school activities (p. 152), such as low attendance at school events or “a lack of parent-initiated contact [as] signs that African American parents do not care about their children’s academic success or failure” (p. 157). This myth perpetuates the struggle to achieve parent-school partnerships. Thompson indicates that African American parents may avoid the more expected participation in school-based activities, such as volunteering at school and attendance at PTA meetings, because they recall negative schooling experiences, feel unwelcome, or have been called to attend primarily when their children have difficulties in school (p.156). In contrast, her study of African American students’ perceptions revealed that the majority of these elementary and secondary students believed their parents were significantly involved in their lives and education (pp. 154–55), and provided invisible support, such as supportive parenting, extended family networks, and “coping strategies” to deal with racism and discrimination (p. 156). In addressing the disparity between educators’ and Afri-

can American students' perceptions of parental involvement, Thompson offered the possibility that "educators are using a limited paradigm to measure parent involvement" (p. 157).

Research with Latino families also reveals a high value on education and high expectations for student achievement, but also a general unfamiliarity with the schooling process, in particular in relation to immigrant parents (Reese et al. 1995; López 2001). These parents must also struggle to dispel negative perceptions about them while trying to understand and negotiate an unfamiliar school system. Some studies have shown a difference between teachers' and parents' concepts of parent involvement (Calabrese Barton et al. 2004; Hidalgo, Siu, and Epstein 2004). As Hidalgo and colleagues point out, "Some strategies that parents employ may be missed by a parental involvement definition if the teacher does not consider the activities that parents conduct at home among family members" as involvement (p. 637). Thus, they propose "a social-contextual approach [that] uses parental knowledge, values, beliefs, and at-home practices to reconstruct the concept of family involvement" (p. 634).

TOWARD AN EQUITABLE MODEL OF PARENTAL INVOLVEMENT

J. A. González-Pienda et al. (2002) provide an interactive "structural equation" model of different forms of parent participation in schooling and its potential consequences. According to these authors, the relationship between parental involvement and academic achievement is indirect, impacting in the first instance upon a student's self-concept (pp. 261–62). The potential consequence of theorizing the relationship between parental involvement and academic achievement as mediated and multifaceted is to attribute to parents their value in educating their children while avoiding a deficit perspective, which would more directly link a lack of parental involvement, as defined by the school, with student failure. Parental involvement can be viewed as one factor in a constellation that includes "academic aptitudes," "causal attributions," and "self-concept." Studies of parental involvement are well advised to consider multiple measurements of parental involvement, for example, parents' achievement expectations, help with homework, positive reinforcement, and their

relationship to other influences upon student achievement (Gonzalez-Pienda et al. 2002).

A. Calabrese Barton et al. (2004) urge researchers and educators to view parent participation in their children's education through the lens of an ecological parent engagement model. This model reconceptualizes parent involvement as engagement within an ecosystem comprised of home, school, and community; the work integrates perspectives from cultural historical activity theory and critical race theory, and combines them with Bourdieu's concepts of space and capital. These authors consider that "parental engagement is a social practice, sustained through active participation and a dialogue in a social world" (p. 6), situated "as a relational phenomenon that relies on activity networks" where space and capital play a critical role in "the academic venue of schooling" (p. 3). Each of these elements is culturally and historically dynamic, shaping a parental engagement that mediates effective home-school relationships.

Equity, then, may lie in locating the power to define parent involvement in both parents and schools, rather than one or the other. Schools must examine their ideologies about the home language, culture, and ethnic or racial makeup of the children they teach. L. C. Moll and N. González (2004) propose a model in which teachers visit their students' households in the role of learners about the families' histories and experiences, and with a theoretical emphasis on documenting the "funds of knowledge" that characterize household life (see also, Mercado and Moll 2000). A goal of this work is to facilitate new social relations between teachers and parents that will shape perceptions of working-class and low-income households and communities as possessing experiences and knowledge that can become resources for instruction. C. Delgado-Gaitán (2004) has also proposed a model of parental participation that extends beyond simply accommodating parents to school-sanctioned structures, instead creating a social activism among parents in relation to schools to help them overcome structural barriers and advocate for their children's interests.

O. Vasquez (2003), in turn, has developed an after-school program, called *La Clase Mágica* (The Magic Classroom), based around the children's use of computers, that employs a more expansive collaborative model that extends the ecology of parental participa-

tion in their children's learning. Local community residents, especially the children's families, not only represent an additional resource for teaching, contributing their knowledge and experiences, but also help establish these settings' cultural identity by contributing to the nature and content of its routines. Parents also help to secure funding, organize parent meetings and other support networks, participate in computer activities at the site with their children, establish long-term relationships with university students and professors, and often become site coordinators. The long-term existence of such a non-school setting depends crucially on the network of support it can generate, especially from families, and how it can mediate existing constraints, especially fluctuations in funding. The involvement of parents becomes an essential strategy to help perpetuate the site within its host setting, be it a local club, library, or church.

These activities, ranging from establishing more symmetrical parental relations with teachers to cultivating parental activism in educational practice, may lead to new forms of participation in education that may help challenge, as necessary, the existing structure of schooling, especially for low-income students. It may be a matter of establishing ownership of schools, perhaps not dissimilar from middle-class parents' positioning of power in relation to schools (de Carvalho 2000; Lareau 2003). As Calabrese Barton and colleagues suggest, in advocating for their engagement perspective, it is important to understand "how parents activate nontraditional resources and leverage relationships with teachers, other parents, and community members in order to author a place of their own in schools" (p. 11).

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CHILDREN'S RIGHTS

Today, children's rights is a serious social and political issue not only in the United States but also throughout the world. The 1959 United Nations Declaration of the Rights of the Child, the 1979 International Year of the Child, and the 1989 United Nations Convention on the Rights of the Child (UNCRC) mark the formal entry of the contemporary children's rights movement onto the international stage. Children's rights advocacy groups have multiplied over the years with such well-known organizations as UNICEF (1946), Save the Children (1919), and the Children's Defense Fund (1973), being joined by newer groups such as Children as Peacemakers, Childrights International Research Institute (CRIN), South Asian Coalition on Child Servitude, Black Community Crusade for Children, and World Association for the School as an Instrument of Peace. CRIN counts more than 1,300 child rights organizations in its membership network.

The concept of children's rights tends to conjure up a mixed bag of images and reactions. These images and reactions include anxiety produced by high-profile cases such as the Florida boy Gregory Kingsley's attempt in 1992 to "divorce" his natural/biological parents as well as sympathy stimulated by the sight of eight-year-old child laborers in India shackled to their weaving looms. Some regard children's rights as having something to do with protecting and providing for children, while others fear that children's rights is a corrosive challenge to the rights of parents and the privacy of the family. To navigate through the mixed bag of images and reactions, it is useful to answer several questions. What is a "child"? What is a "right"? What are "children's rights"?

In article 1 of the UNCRC (1989), a child is defined as "every human being below the age of eighteen years unless under the law applicable to the child, majority is attained earlier." The UNCRC definition

is rather broad. For many in the West, childhood is synonymous with dependency, and often with extended schooling. This, of course, is a definition conditioned by history and culture. Legal provisions can provide some guidance but here too there is much variation even within individual societies. In the United States, young people can often obtain a driver's license at age sixteen, they can vote at age eighteen, but in many states they cannot legally drink alcohol until age twenty-one though in nearly all states they can marry at age eighteen.

From a cross-cultural perspective, it is probably universally agreed that childhood begins at birth, but confusion sets in when it comes to determining the end of childhood. And does childhood end in one fell swoop, or in stages, through gradual and varied transitions? Do gender, class, race, religion, or other factors play a role in determining when childhood ends? What are the rites of passage that mark the end of childhood and the onset of adulthood? Millions of children in the world do not attend school, but work in factories, mines, homes, shops, fields, forests, and offices. The International Labour Organization (ILO) estimated 246 million child laborers in 2004, with 73 million under the age of ten. Hundreds of thousands of children, especially boys, participate either voluntarily or forcibly in armed conflicts as child soldiers. It is estimated that at any given time, there are 300,000 child soldiers under arms. The ILO suggests that 8.4 million children, boys and girls, engage in prostitution, sex tourism, and other forms of commercial sexual exploitation. Working long hours, shouldering machine guns, and trafficking in sex do not seem to be the hallmarks of childhood and yet they constitute the daily activities of so many of the world's children, including those in developed countries. Even marriage raises questions as to the end of childhood because the legal age of marriage,

along with the legal age of consent defining the time at which a person may voluntarily consent to sexual activity with another person, varies from country to country. Although the average age of marriage is generally higher, still the legal age in many countries around the world is as low as twelve. Even in the United States, fourteen-year-old boys and girls can marry in some states with parental consent. Since marriage is one of the few ways a child can be emancipated from parental control (another is military service), a married person of fifteen is no longer considered a child while an unmarried person of seventeen is not considered an adult. What then is a "child"? Given the tremendous variation in the social experiences of children in the world today, the simple definition of the UNCRC holds appeal.

What is a "right"? Throughout history, legal scholars, political thinkers, and philosophers have attempted to answer this question. Human rights and civil rights, substantive rights and procedural rights are some of the varied categories of discussion. Human rights, sometimes called natural rights, are those that belong to a person by virtue of his or her very existence as a human being. Personal freedom, or what the seventeenth-century English political theorist John Locke (1976) called "perfect freedom" is considered a fundamental human right. Human rights are considered inalienable. In the United States in 1776, the founders identified "life, liberty, and the pursuit of happiness" as inalienable rights. In 1789, revolutionaries in France declared the natural and inalienable rights of "man" as "liberty, property, security, and resistance to oppression." In 1948 the General Assembly of the United Nations adopted and proclaimed the Universal Declaration of Human Rights, stating that all members of the human family possess inalienable human rights and that these include "life, liberty, and security of person." Civil rights, often derived from natural rights, are articulated through legal codes and enforced by the state. Citizens of a state claim civil rights. Substantive rights can be seen as similar to civil rights in that they are the rights that are constitutionally guaranteed to ensure personal liberty, while procedural rights relate to the manner in which substantive rights are protected, such as through due process. In the United States, procedural rights protect citizens against arbitrary state actions. Many questions emerge about definitions of "rights" including the relationship of

power to rights, the link between moral claim and rights, the distinction between the right to do something and the right to be free from having something done to you, the balance between liberty and security rights, and the relationship between rights and duties. If rights are understood as "justifiable claims," then who has the right to make the claim and who is obliged to satisfy the claim?

When moving from a discussion of rights in general to children's rights, the complications and questions multiply. Some scholars have argued that children have always been understood to have some fundamental rights, such as the human right to life and security. At the same time, children have throughout history been considered as belonging to their parents, whose liberty rights consisted in part of making autonomous decisions regarding the care and well being of their children. This would certainly undermine the child's right to liberty. Moreover, the dependency of children—their need for care over long periods of time—has served as the rationale for not recognizing their rights beyond the most basic rights to life, and assigning the claim of those rights to adult others on behalf of vulnerable children.

The United Nations Convention on the Rights of the Child, nearly universally adopted, affirms not only the child's right to protection from harm and abuse, but also the right to childhood, to develop into an autonomous adult, and to have a voice in matters that affect and concern the individual child. Contemporary literature on children's rights identifies several categories of rights: protection rights, provision rights, and participation rights. Another distinction found in the contemporary literature is that between protection rights and liberty rights, a characteristic that underscores some of the tensions inherent in children's rights. Protection rights usually take the form of benefits that adults provide to children such as the right to nutrition, housing, and education. Since adults provide these benefits they tend to exercise power over children. Liberty rights imply the exercise of power, and yet most of the rights subsumed under the heading of children's rights do not give children power or control over their own lives. In some ways, protection rights actually limit the freedom of children, such as when children in the juvenile justice system are protected from the harsh judgment of the adult corrections system,

though in exchange young offenders lose their due process rights. Most often, adults exercise liberty rights while children claim protection rights.

A historical perspective suggests that protection rights have a long history, while provision rights (entitlements) emerge most clearly in the nineteenth century (especially the second half of the nineteenth century). Most historical accounts fold provision rights into protection rights. Participation rights or liberty rights appear as a by-product of the civil rights and human rights movements of the later twentieth century. The fact that different labels—protection, provision, and participation—attach to children's rights at different periods suggests that evolving understandings of childhood shaped different conceptions of rights for children throughout history.

In early modern times (1500–1750), the image of children as willful and tending toward sinfulness supported a climate of strict discipline and punishment that afforded only the barest forms of protection against gross abuse. As the image of childhood innocence and dependency deepened in the nineteenth century, adults made extensive efforts to protect and care for children, going so far as to use public and private organizations to intervene in the private realm of the family. By the later twentieth century, awareness of the evolving capacity of children (in contrast to a fixed state of dependency and assumed incompetence) had led to a more liberal view of their autonomy and rights-bearing potential. The heightened politicization of young people around the world in the years following 1968, and the subsequent turmoil experienced in many nations, marked a genuine turning point in the emergence of the modern children's rights movement. Today, advocates of children's rights promote the active participation of young people in the public sphere. The 2002 United Nations General Assembly Special Session on Children (UNGASS) boasted the unusual sight of children and young people participating in debates and discussions alongside government officials. In the United States, a national nonprofit organization called Youth Venture empowers young people between the ages of twelve and twenty to form organizations—civic, cultural, and business—to create change in their communities and schools. This effort recognizes that young people constitute not only a deep untapped reserve of energy and ideas but also that they have an interest in what happens to the communities in

which they live, and that implicitly they have a right to participate in change.

The common thread in the concept of children's rights across time is that children have a legitimate claim against other agents, including their families and their governments. The claims made in the name of contemporary children's rights fit into the historical liberal tradition of the West, with its emphasis on the inherent dignity of the individual, the natural equality of humans, and the possession of certain inalienable rights. However, the children's rights movement challenges historically entrenched notions of children as the property of their parents or an interest of the state, and instead posits the idea that children should be seen as persons in their own right. As this "human rights" claim expands, it is matched by a "civil rights" claim to specific quality-of-life provisions and increased procedural protections.

Kathleen Alaimo

IMAGES OF CHILDHOOD IN EUROPE AND IN THE UNITED STATES

In the European and American context, childhood has undergone several constructions and reconstructions since the dawn of the modern era, c. 1500. These include a pre-industrial model in which the worlds of children and adults were closely integrated, and all lived under the yoke of patriarchal authority; an eighteenth-century Enlightenment model which emphasized the evolving rational capacity of children as well as their distinctive individuality; the model embodied in the efforts of the American Revolution (1776–1787) and French Revolution (1789–1799) to transform the familial subjects of a king into individual citizens of a republican state; the early nineteenth-century vision of Romanticism which cast childhood as joyfully different, even better, than adulthood; and the later nineteenth-century model of the paternalist state establishing that childhood stood in need of government-sponsored protection and services.

In the pre-industrial world of the early modern era, social cohesion represented an essential goal of society. As a result, sixteenth-century children were

defined more in terms of their duties to adults, including their parents, than in terms of their own rights. Harsh discipline toward children appears to have been common, as conduct and advice books for parents attest. Figures as diverse as Martin Luther, Lady Jane Grey, Michel de Montaigne, and Heroard, the physician charged with the care of the King of France's children, recorded accounts of frequent whippings, often for little cause. Richard Whitford's *Work for Householders*, popular in both Tudor England and colonial America, urged parents to whip small children with a rod if they exhibited stubborn behavior and punish older children with diets of bread and water.

Despite the seeming prevalence of harsh corporal punishment of children, a counter-tradition existed in Europe that urged parents to recognize and fulfill their duties towards their offspring. For example, English courts in the early seventeenth century asserted the right of very young children to nourishment, placing the burden on mothers and fathers to meet this obligation. In one case, the mother of an infant and its "reputed" father were assessed a fee to pay for a wet nurse. At the Council of Trent, Catholic bishops cautioned parents about sleeping in the same bed as their children due to concerns about accidental as well as deliberate suffocation, the result of "overlying."

Early modern children were intimately tied to the institution of the family, where from about the age of seven they began a slow initiation into the intergenerational world of work. The economic contribution and therefore the economic value of children were considerable. Even very young, idle children, who constituted an initial expense, were understood as a potential labor force for the family. As rural or cottage industry began to develop, especially in the seventeenth century, the labor of children and therefore their economic value increased. Reports exist of children as young as four and five working in the textile districts of England. Agricultural child labor and proto-industrial child labor accustomed people to the idea that children should work, and that this work would bring them into contact with adults.

High infant and child mortality prevailed throughout the early modern period in both Europe and colonial America. One in four children died before their first birthday; survival to the age of ten varied but

was fraught with danger too. Generally, the deaths of children constituted the majority of deaths in any community. In late seventeenth-century Florence, two-thirds of all deaths were of children under the age of five (Cunningham 1995). Marking an extreme case, eight of fifteen of Puritan preacher Cotton Mather's children died before the age of two, and another died shortly after turning two (Slater 1985). Infant mortality in Virginia and Maryland may have been as high as 40 percent in the seventeenth century (Smith 1985). Though Englishwoman Susanna Wesley bore nineteen children, she raised only six into childhood due to infant and child mortality (Bel Geddes 1997).

Despite the pervasiveness of childhood death and the liberal use of physical punishment, parents of the early modern era held their children in affection and public investment in the preservation of children began to develop at that time. Christians were particularly concerned that their newborns get baptized as soon as possible, often on the day of birth. Efforts to curtail infanticide and abandonment increased during this time as municipal and state foundling homes proliferated in the seventeenth and eighteenth centuries. In the French city of Rouen, the municipality funded an aid program for poor families, providing a subsidy for families with more than two children.

High adult mortality affected children too. Parental death, especially the death of a father, opened issues of child custody and inheritance of property. Throughout Europe, and later in the colonies of North America, communities developed specific provisions to protect the property rights of orphans. And for orphans without property, laws governed their placement with other families. In colonial Virginia and Maryland, special orphan courts handled the custody of children to ensure their care and took responsibility for the protection of children's property. These arrangements were increasingly formalized by court order.

Though schooling was certainly quite limited in this period, it did exist in both urban and rural communities. The Protestant and Catholic Reformations contributed to a rise in formal schooling, as the competition to win or retain religious adherents increased. Religious reformer Martin Luther became an early proponent of compulsory schooling and by 1600 some European communities had made modest elementary education compulsory. One German town

adopted a schooling requirement that emphasized the importance of education for a child's religious salvation, self-governance, and skill acquisition but also mentioned the interest that the community has in a child's education (Cunningham 1995). In Denmark, a 1630 law assigned to public guardians responsibility for children whose parents neglected to send them to school or teach them a trade (Franklin 1995). In 1642, the Puritan colony in Massachusetts adopted a similar statute. By 1705, Massachusetts towns with seventy or more residents were required to maintain a grammar school (Fass and Mason 2000). Catholic efforts to expand educational opportunities were led by religious orders such as the Jesuits, the Christian Brothers, and the Ursulines.

The early modern sense of a child's right to support, property, and even education carried many limitations. In most cases, the "right to support" was tied to mandatory placement as an apprentice or servant with another family or tied to child labor for one's own family. Apprenticeship contracts arranged by one's parents, as well as court-ordered placements (binding out), typically lasted from age fourteen to twenty-one for boys and to age eighteen for girls. Vagrant children were generally subject to local laws authorizing their collection and placement in apprenticeships. By the early seventeenth century, childhood vagrancy in places such as London had become such a severe public nuisance that officials initiated a plan to ship such children to the American colonies. Indentured youth arrangements prospered throughout the eighteenth century and were not limited to British colonies. The Portuguese, French, and Dutch had similar arrangements for excess, vagrant, idle, and homeless youth.

Parental authority and parental responsibility were both recognized in the early modern period, although the balance tipped in favor of broad parental authority. Discipline was a parental duty, and corporal punishment was almost universally accepted as appropriate. Parents, especially fathers, ruled their children much like monarchs ruled their subjects. The legal provisions in the *Body of Liberties*, promulgated in the Massachusetts Bay Colony in 1641, provided for the capital punishment of children over sixteen who assaulted their parents (Fass and Mason 2000, Hawes 1991, Mason 1994). At the same time, excessive use of force was not condoned in the disciplining of children, including apprentices. Contracts

for indentured apprentices stipulated that apprentices should not be mistreated. Court records provide evidence that excessive punishment was censored. And even the Massachusetts *Body of Liberties* set some conditions. Parents could not act arbitrarily but rather had to bring their rebellious offspring to the public court. The harshest provisions of these "stubborn child" statutes applied only to older children, specifically those "of sufficient years and understanding, viz. sixteen years of age." Thus, the statute not only suggested that severe punishment was inappropriate for younger children but also implied a nascent understanding of the evolving capacity of competence.

Any assessment of the place of children and children's rights in the early modern era must take account of the precarious conditions of existence. Children who survived birth and early childhood were generally closely integrated into the world of adults and the world of labor. Moreover, adults everywhere subjected children to strict rules and harsh discipline. Yet, the idea of children's special needs existed along with the notion that these needs established a public interest in children. Significantly, the early modern interest in the protection of children, including their basic right to maintenance and instruction, was rooted in anxiety that neglected children might become a liability to the community.

By the eighteenth century, a spirit of enlightened thought had begun to spread across Europe and colonial America. Numerous Enlightenment thinkers focused on childhood education in an effort to systematically reconsider the foundations and institutions of civilized society. This "long" eighteenth century (from the last decade of the late seventeenth through the first decade of the nineteenth century) engendered a pronounced sensitivity to childhood, with a clear articulation of childhood as a distinct stage of life having its own ethos and in need of its own institutions. Linked to a critique of traditional Christianity's concern with original sin, the Enlightenment adopted a view of humanity as inherently benevolent, allowing it to rethink the nature of childhood. As a consequence of this shift, debate over the use of corporal punishment emerged, leading to calls to "throw away thy rod." The Enlightenment's attention to the development of the individual child is an important milestone leading to the twentieth-century concept of the rights of the child. A brief intro-

duction to the work of two seminal Enlightenment thinkers who contributed in different ways to this development should clarify the significance of the Enlightenment in the history of childhood and children's rights.

John Locke (1632–1704), an English physician, statesman, and influential political theorist, laid some of the groundwork for a change in the conceptualization of children and children's rights in *An Essay Concerning Human Understanding*, originally published in 1690, and *Some Thoughts Concerning Education*, originally published in 1693. Among Locke's well-known ideas is his view that the mind is a "blank slate" without innate ideas; from this Locke theorized that all knowledge comes from experience. Based on this understanding of the sources of human knowledge, Locke asserted the power of education to shape the child, claiming that children turned out good or bad primarily due to their education. Convinced that nurture played a larger role than nature in childhood development, he regarded faulty education as a serious problem. Locke also believed each child developed a unique personality. He advised parents and educators to watch children at play in order to discover their true nature and then use those observations to develop an appropriately personalized plan for their education. He rejected corporal punishment and urged parents and educators to treat children as rational creatures. Locke recognized the special needs of children due to their "tender age and constitutions" and the importance of cultivating a "child's spirit, easy, active, and free." Although Locke's thinking marks an important shift in the conceptualization of childhood in the West, there are limits to his apparent child-centeredness. Locke emphasized "habit formation" in children hoping they would internalize restraint and become productive self-governing adults. He was interested in children and childhood education in so far they contributed to the development of future adults.

Jean-Jacques Rousseau (1712–1778), a radical French philosopher, took a different approach in his 1762 educational treatise titled *Emile*. Genuinely concerned with the process of growing up, Rousseau implied that children had a right to a happy childhood, characterized by freedom and closeness to nature. In the preface to *Emile*, he complained: "The wisest writers devote themselves to what a man ought to know, without asking what a child is capable of

learning. They are always looking for the man in the child, without considering what he is before he becomes a man." Rousseau did not think children should be made to reason too soon and he identified ways of knowing that he believed were not only unique to childhood but sometimes more effective ways of learning than the methods of adulthood. Rousseau proposed a profoundly modern view of childhood, one that recognized the inherent dignity of the child, the intrinsic value of childhood, and the compelling distinction between childhood and adulthood. He concluded: "Humanity has its place in the general order; childhood, too, in the span of human life; we must look upon man in mankind and the child in childhood." (*Emile* by Rousseau)

Following in Rousseau's footsteps, poets, artists, and writers of the Romantic era (which spanned the late eighteenth and early nineteenth centuries) took up and popularized his ideal of an innocent, natural, carefree, happy childhood. Romantic writers rejected Locke's utilitarian education and instead called for freeing the child's imagination. Romanticism proclaimed childhood as the best part of life, and attributed qualities of purity and innocence to the child, which enabled children to recognize truth and beauty. Ironically, this idealization of childhood coincided with the emergence of the first industrial societies, which prospered in part on the exploitation of child labor. Despite Romanticism's idealization of childhood, child-rearing practices in the early nineteenth century continued to aim at habit formation in the tradition of John Locke. Yet the Romantic's conception of childhood, derived from Rousseau, would gradually re-shape the nineteenth-century response to children and contribute to a notion of children's rights.

The end of the eighteenth century also witnessed the outbreak of political revolutions across the Atlantic world, first in the British colonies of North America, then in France, the most powerful monarchy in Europe, and eventually across the colonial landscape of the Americas. Proclaiming the "rights of man," the decades from 1770 to 1830 reshaped the political landscape of the West. Both the American Revolution and the French Revolution attacked arbitrary authority of many forms including the arbitrary authority of the family patriarch. Enlightenment child-rearing practices aiming to cultivate disciplined, self-reliant, and self-governing individuals

fertilized the political landscape on which these revolutions occurred. The arbitrary practices of fatherly monarchs no longer responded to the new conception of the family. Revolutionary legislative proposals sought to dismantle the patriarchal family and establish a new place for children in the family. In France, notable examples of these efforts are such specific provisions as the elimination of primogeniture and the institution of equal inheritance, the elimination of distinctions between legitimate and illegitimate children, the passage of a liberal divorce law, and provisions for child support as well as maternal custody claims. Thomas Jefferson wrote eloquently against the practice of primogeniture that he believed undermined republican society. After the revolution, many of the new states in the United States passed statutes that eliminated primogeniture. The French philosopher and revolutionary Condorcet drafted a plan for the public education of all children in France. Then during the most radical phase of the revolution, the National Convention attempted to create a complete system of public education for boys and girls—an effort that failed due to lack of resources as well as political turmoil. Thomas Jefferson and Benjamin Franklin both drafted wide-ranging education proposals to bolster the new citizen-based republic. Many of the new states had constitutions calling for public elementary education. In sum, the revolutionary era levied a serious blow against exclusive paternal authority by promoting the conception of the nation as a population of individuals, each with a direct relationship to the state, including children as future citizens.

Despite Enlightenment ideas, visions of Romanticism, and revolutionary era challenges, the legal situation of children remained relatively unchanged in the early nineteenth century, especially in Europe. There, the Napoleonic Code specified the legal subordination of children to their fathers until the age of twenty-one. In France, fathers retained the right of correction—the right to request a child’s detention—well into the twentieth century. While fathers were obligated to support their legitimate children, they also had uncontested control over their children’s wages and property. Children’s rights seem to have been limited to protection against extreme abuse, such as prostituting one’s children, or parental unfitness, often measured by the delinquency of children.

During the nineteenth century, the main devel-

opment regarding children’s rights occurred in reference to industrial child labor. Humanitarian concerns motivated this movement in which reformers cast child laborers as defenseless victims of industrialization. Romanticism contributed to the view that industrial child labor, in contrast to farm or craft work, was unnatural. Factory work exhausted children who, as young as seven, worked sixteen hours a day in damp, poorly ventilated workplaces where whippings and dousings with cold water kept children at task. Health hazards abounded as child laborers inhaled cotton dust, metal filings, and acidic dyes while machines chopped their limbs. The image of the working child aroused popular sympathy and state intervention. Early efforts to regulate child labor occurred in England in 1833, Prussia in 1838, France in 1841, Massachusetts in 1842, and in Lombardy (Italy) in 1843. This response was both a cause and an effect of the new status of childhood as an age of innocence and development. The most significant aspect of the child labor reform movement is that it opened a public discussion about the social meaning of childhood, specifically opening the door to the radical notion that perhaps children should not work at all, that perhaps they had a right not to work, a right to a different childhood—one of physical, moral, intellectual, and social development (Alaimo 2002).

Between 1870 and 1920, government authorities and trained professionals took the lead in conceptualizing and protecting childhood, thus inaugurating the age of “child saving.” Although motivated by traditional concerns about children’s morality, public order, productivity, and population quality and quantity, the new “child savers” also hoped to save children so they might enjoy childhood. During these decades, the rights of children in relation to parents, employers, and others expanded in the form of rights to protection and services based on an image of childhood as a distinctive and vulnerable time of life.

The state with its army of professionals became the guarantor of these rights, challenging parental autonomy as it exercised *parens patriae*, the idea that the state is responsible for minors, the weak, and the incompetent. With children increasingly separated from adults, childhood came to be seen as a distinctive stage of life with age-specific requirements.

Although families came under much greater “po-

licing” as a result of state-sponsored child-saving measures, significant, and often beneficial, changes occurred in children’s lives. Perhaps most importantly, schooling replaced working as the normative social experience for all children. From 1870 on, laws made school attendance compulsory for children, but also made schools free, public, and professional. Child health improved steadily, in part due to the expansion of school medical services. Questioning the assumptions of family privacy and parental autonomy, professional child savers challenged parents who neglected, abused, and endangered their children. In 1889 both France and Great Britain passed laws against child endangerment including that caused by parents. In Norway, the Child Protection Act of 1896 brought children in a variety of circumstances under state tutelage, including delinquents, truants, and those neglected by their parents. A similar law passed Prussia’s parliament in 1900. Also at this time, delinquent children were removed from the adult correctional system and serviced by a new juvenile justice system. Illinois founded the first juvenile court in 1899, a practice followed in Britain in 1908 and in France and Belgium in 1912. Juvenile court operated on different principles than its adult counterpart: reform and treatment, not punishment; preventive action; indeterminate sentences that depended on a child’s response to treatment; probation or supervised freedom; scrutiny of the family itself (Alaimo 2002, Hawes 1991).

In segregating and protecting children, these public policies and institutions aided in the creation of a dependent childhood, highly regulated by adult guardians. Moreover, by the early twentieth century, child saving as a state policy targeted not only deprived children but all the children of a nation and even extended the age-definition of child to include those up to the age of twenty-one. The protection of children, limited in the early modern period to protection against extreme physical abuse and protection of property, became a dramatically enlarged field by the end of the nineteenth century. Alleged parental neglect, incompetent parenting, and the realities of poverty emerged as legitimate criteria for state intervention in the life of the child. The child’s right to protection led inexorably to the child’s right to provisions of various sorts, with the state responsible for providing these services. Children were not

only freed from work and placed in schools. Increasingly, children seemed to have gained the right to health care, sanitary housing, playgrounds, and organized recreation. As more and more children entered state-funded schools, children with disabilities captured public attention. Most teachers and school administrators found such children difficult to deal with and soon separate facilities emerged to provide for “handicapped” children. Ironically then, children with disabilities became marginalized while “normal” children benefited from the expanding terrain of children’s rights.

After the Second World War and with the rise of an international human rights movement, children’s rights entered a new era. The 1959 UN Declaration of the Rights of the Child asserts that each child has the right to a “happy childhood” and its principles bear the stamp of the traditional protection-provision view of children’s rights based on an assumption of childhood dependency and vulnerability. However, the declaration also emphasizes the individuality and autonomy of the child. The 1989 United Nations Convention on the Rights of the Child is even more explicit in this regard, asserting rights for children that would guarantee their individuality and autonomy, such as the child’s right to free expression and association. This articulation of children’s rights might be interpreted as a reaction against the overwhelming shift toward dependency and powerlessness characterized in the ideas of Romantic childhood and the practice of state-sponsored child-saving protectionism. Also, the new understanding of children’s rights, which extends to participation based on evolving capacity in matters of self-interest, can be seen as a reaction against the excessive segregation of the child from the adult that seemed to be so essential to the vision of innocent childhood.

As European and American societies fueled a demographic baby boom in the later 1940s and 1950s, the stage was being set for an explosive youth culture and a redefinition of childhood and children’s rights. From crowded elementary schools in Chicago to crowded university halls in Paris, young people in the 1960s listened to their own music on their own personal transistor radios. This generation fostered a culture of protest, but more importantly challenged the view of childhood as dependent and passive, in need of adult supervision. Instead, the voice of youth demanded greater autonomy in certain aspects of life

but especially in school discipline, school-based speech, and social life. University and secondary school students laboring under laws and social practices that treated them much like children demanded changes in dormitory rules, pedagogy, student newspaper content, and dress codes. These protests signaled the growing importance of evolving capacities and competencies.

In the United States and Europe this new trend found expression in new legal practices that provided children with a voice of their own in the courtroom. In *Tinker v. Des Moines Independent School District* (1969), a case involving antiwar demonstrations by several Iowa junior high and high school students (Wadlington et al. 1983), the U.S. Supreme Court declared that students are “persons” under the Constitution. In *Goss v. Lopez* (1975) the Court found that students could not be suspended from school without a hearing and an opportunity to tell their side of the story (Wadlington et al. 1983). In Belgium and the Netherlands, Children’s Law Shops opened to provide legal information and assistance to children. Following this trend, the Children Act of 1989 gave British children a legal voice in decisionmaking related to their welfare. As children claim legal and civil rights they interact more with adults, shedding some of the distinctiveness attributed to them in the past. This development is not without problems: How should the right of the child to be a child—dependent, protected, separated—be balanced against the right of the child to be a person, possessing rights to autonomy and participation?

Although images of childhood and children’s rights have evolved throughout centuries of history in Europe and the United States, contemporary beliefs that children have legitimate claims to make against external agents (parents, schools, employers, the state) can be found in embryonic form throughout the centuries surveyed here. The UNCRC, which embodies ideas developed in Europe and the United States, represents the accumulation of expanding notions of children’s rights to protection and provision based on their vulnerability due to age, their developmental status, the extent of parental resources, and even parental abilities. The UNCRC also asserts the principle of the best interests of the child (article 3) much like nineteenth-century reformers did. Still, the UNCRC brings to the table a new recognition of the

child’s right to a voice, and this is very much an indication of the changing view of childhood in Europe and the United States. Earlier images viewed the child as sinful, rational, malleable, and savable; the contemporary world views the child as independent and assertive. The UNCRC reflects this by acknowledging that children have the right to express an opinion in matters that concern them (article 12) and by asserting the importance of the idea of evolving capacities (article 5), as opposed to a fixed state of dependency.

The prevalent image of childhood in Europe and the United States today is in some ways a blend of Lockean and Rousseauist views: the child as a person learning to become an adult and the child as a child with its own inherent dignity, needs, and value to the community. Childhood is not adulthood and as such a child is not an adult. At the same time a child is a human being in the process of becoming an adult. The crucial characteristic in contemporary understandings of childhood today, in contrast to earlier periods of history, is that childhood and the child are no longer seen merely as preliminary to adulthood and the adult. Rather, childhood is a stage of life that has an end of its own, and the child has a value independent of the adult that may eventually emerge. Indeed, an extreme example of this can be found in popular consumer culture where children constitute the lucrative audience of age-specific programming promoted by television networks devoted exclusively to youth programming (e.g., Disney, Nickelodeon). Other examples, however, provide necessary balance. The oral history project *Teen Chicago* developed by the Chicago Historical Society in 2004 gives voice to teenage experiences both in the use of high school students as interviewers and in the collection of “coming of age” stories as valid materials for a historical exhibit. In June 2003, the European Children’s Network organized a conference on “Children and the Future of Europe” that brought together European young people aged twelve to seventeen to debate the future of children in the European Union with representatives from EU nations working to draft an EU constitutional treaty (European Children’s Network 2004).

Kathleen Alaimo

PHILOSOPHICAL AND PSYCHOLOGICAL PERSPECTIVES ON CHILDREN'S RIGHTS

The language of rights in relation to children is confusing at best. Any discussion of children's rights must recognize the challenges, even paradoxes, inherent in promoting rights for children. The right of the child to personal freedom and autonomy may undermine the right of the child to care and protection. For example, juvenile curfew laws, already widespread in the nineteenth century and upheld in modern constitutional challenges, limit the personal freedom of a child while claiming to offer protection from the dangers of the street to those who are underage. A similar tension is revealed in the application of child labor restrictions that limit the freedom of children to work and contribute to the support of their families in the name of the child's right to protection against economic exploitation. The right of parents to consent (or not) to medical treatment for their minor children is generally supported on the basis that children may not fully understand the medical picture, and yet this same right of parents to consent to treatment has in the past permitted parents to impose involuntary psychiatric hospitalization on their children. These examples demonstrate the profound philosophical difference between the principle of child protection and the principle of child liberation. Given the universal dependence of children on others (to varying degrees throughout their childhoods), the psychological concept of "competence to consent" has emerged as a central issue in many philosophical and legal discussions of children's rights.

Philosophers who study ethics bring some perspective to the discussion of children's rights by exploring essential questions that mediate between the theoretical and applied. Should children be treated differently than adults? What arguments would justify different treatment? What arguments support treating adults and children in the same fashion? Is the language of rights appropriate in discussions of children, or the family in general? Do children have the capacity to exercise the claims of rights-holders as articulated in western liberal philosophical thought? Do rights protect interests or choices or

both? How might the distinction between rights exercised on behalf of children (to protect interests) and rights exercised by children (to protect choices) further the discussion?

Historically, philosophers did not consider children as being capable of exercising rights though many defended the notion that children possessed rights to maintenance or protection, and often placed the obligation to meet those requirements on fathers who also enjoyed substantial, if not unlimited, control over their offspring. John Locke, the influential seventeenth-century political philosopher, arguing that the capacity to reason lay at the heart of the ability to exercise rights, stated that children fell under their parents' authority during their period of minority precisely because they did not possess a fully developed capacity to reason. Not surprisingly then, Locke emphasized the importance of childhood education to train young people in the development of their rational capacities. John Stuart Mill, a leading political thinker in the nineteenth century, also acknowledged that "maturity of faculties" was a prerequisite for the exercise of liberty (Ladd 2002). Children, he said, must be protected against their own actions as well as against possible external sources of harm. Many contemporary philosophers have continued to argue in this vein, emphasizing that children are different from adults in morally significant ways. The inability to reason and judge, to protect and guard, emerge as the primary obstacles to children exercising rights. At the same time, these very qualities support the argument in favor of protection rights for children, rights most often exercised on behalf of children.

To the philosophical questions must be added a series of psychological insights. What are the differences between children and adults, and what is the significance of these differences in the discussion about rights? Consider the comparison with gender differences. In the past, many intelligent thinkers argued that not only are men and women different but also that these differences are substantial and significant in relation to the exercise of rights. Historically then, the denial of equal rights to women was rooted in an assessment of the relevance of gender differences. Advocates of women's rights argued that most differences between men and women were the result of environment (education, social roles, etc.) and those differences that remained after accounting for differ-

ences of opportunity were morally and politically irrelevant. Advocates of children's rights face a different task because the differences of developmental age are of a fundamentally different order than gender differences. No amount of intensive educational and socialization effort can produce a five-year-old who can reason and evaluate choices the way a twenty-five-year-old can. In discussions about children and their rights, psychologists suggest that information about competence is essential. Moreover, the notion of "evolving capacities" is critical to any assessment of a particular child's capacity to exercise rights of choice, control, or autonomy. The question of children's competence then is fundamental to any discussion of children's rights to self-determination. While philosophers have grappled with the ethical and practical implications of two important concepts—"best interest of the child" and "evolving capacities of the child"—psychologists have worked to clarify developmental trends in children's competencies. Research on children's hypothetical (laboratory) and real-life problem-solving abilities and their vulnerability to social influences have informed philosophical analysis of the viability of children's rights.

Contemporary philosophical discourse on children's rights centers on what kinds of rights children possess as members of the human family. It is assumed that the use of rights language is appropriate when discussing serious, strong, valid, justifiable claims. For example, we might reasonably refer to the right to trial by jury but not to the right to desert. Rights language refers then to justifiable entitlements that an individual can legitimately claim and that another individual is obliged to respect or fulfill. Since children have long been recognized as entitled to certain basic supports (i.e., nourishment, maintenance), the contention in philosophical discussions is whether children are entitled to liberation rights as well as protection rights; that is, are children entitled to the same rights as adults? Identifying openly the differences between protection rights and liberation rights serves to clarify the complications involved in this exercise.

That children are humans in the process of learning about morality, that they have limited life experiences to use as the context for decisionmaking, that they require a period of protection during which they can "practice" decisionmaking without risk of permanently damaging consequences, that parents have

an interest in doing what is best for their children, and that ever-changing social conditions shape children's lives are important factors that support emphasizing protection rights over liberation rights. That adults may not always recognize what is in a child's best interest, that a child of fourteen is more capable than a child of four, that capacity to reason and judge evolves over time and with more varied experiences, that children may have distinct but valid viewpoints to contribute, and that competency may be task-specific are equally important factors and tend to support an emphasis on liberation rights, at least on a sliding scale.

When pondering the foundations of the "good life," philosophers often take into account the balance between justice, equality, and liberty. They consider also utility and consequences. In the tradition of Western political philosophy, it is understood that each individual knows what is best for himself or herself but that there is a limit to how well an individual understands the best interests of another. However, the relationship between adult and child is often seen as being outside this framework. Traditionally, children are said not to possess sufficiently developed understanding about their own needs to know what is in their best interests, especially long-term interests. A philosophical objection to this position suggests that there is no sound reason to assume that an adult individual has any greater understanding of what is in the best interest of the child than such an adult would have in relation to another adult. In other words, when an adult makes a decision for a child, the adult does so with a lot of blind spots, perhaps no more than the blind spots a child with only partially developed capacities has. In this scenario, recognizing that children have the right to make decisions supports justice, liberty, and utility.

The articulation of a philosophical basis for children's rights also serves to underscore the insistence on justice. The demand for rights is usually situated in a context in which there is a perception of discrimination or injustice. The call for rights implies that something legitimate and deserved is being denied or compromised. Though philosophical disagreement abounds on the question of children's rights, the debate itself has raised interest in the possibilities of altering social relationship involving children and the consequences that would result. Thus even philosophers who have argued against libera-

tion rights for children acknowledge that child neglect and abuse are critical problems requiring rigorous attention and that children, especially teens, probably need to have more rights, especially civil rights, than they currently possess. At the same time, philosophical perspectives demonstrate the radical nature of children's rights. When someone claims a right, others are obliged to act in a certain way so as to make it possible for the right-holder to claim his or her right. When applied to parent-child relations, such claims on the part of children would require parents to act in particular ways. Such constraints on parental autonomy represent a departure from historical parent-child relationships. Typically, parents grant children increasingly more independence in decisionmaking as children become more mature; and typically, parents see this "grant" as a privilege that can be revoked if it is misused, either deliberately or unintentionally. In contrast, recognizing the child's right to participate in decisions that affect his or her life seems to challenge parental authority and autonomy.

Another important philosophical perspective on children's rights is one that can be found in the United Nations Convention on the Rights of the Child (UNCRC). There the call is for all of the world's children to enjoy the dignity inherently possessed by all members of humanity and to hold the equal and inalienable rights afforded all members of the human family. However, this emphasis is situated within the clearly articulated claim, repeated several times throughout the preamble of the UNCRC, that children deserve and require special care and protection due to their physical and mental immaturity. The philosophical claim then is this: children must be treated as persons, as humans, but they are to be treated as humans who are children not adults. This insight affords the best possibility for balancing protection rights and liberation rights in a morally relevant fashion and with appropriate consequences for justice in the world.

A growing body of research from developmental psychology supports and advances this philosophical breakthrough. Much of this research is in the area of children's competence to give or refuse consent and this work has significant implications for the legal standing of young people as well as for the larger picture of children's right to participate in decisionmaking that affects them whether

at home, in school, in state care, at work, or in the doctor's office.

Developmental psychologists have gathered systematic empirical data on the ability of children at various ages to make competent decisions. This research conclusively demonstrates two key findings. First, that teens as young as fourteen are as capable as adults of evaluating the information and choices related to medical and mental health treatment, reproductive health, and research participation. Second, that these teens make reasonable decisions. In addition, there is hypothetical (laboratory) evidence to suggest that even younger children generally make the same decisions as adults though they are usually less likely to be able to articulate the same reasons adults give for their choices. Other research avenues have explored the qualities that characterize maturity in minors, such as how they obtain and evaluate information, whom they consult, whether they conform to peer or parental advice, and how well they reason. Perhaps the most fruitful research investigations have explored how the concept of evolving capacities functions in the decisionmaking of young people. Many developmental psychologists have suggested that not only are there stages to the development of the cognitive abilities needed to make competent decisions but also that early practice at age-appropriate decisionmaking encourages the continued and more effective development of competence. The influence of this research is seen in the practice of clinicians who in the vast majority of cases attempt to obtain adolescent informed consent for psychotherapy. Surveys of psychologists suggest that they generally ask for consent at an average client age of 12.8 years. Research on adolescents' decisionmaking skills suggests that over the course of junior high and high school years, teenagers' ability to evaluate advice given by others (including those with vested interests as well as independent specialists) increases significantly. This parallels the body of psychological research and theory that identifies significant cognitive changes in early adolescence, whereby young teens develop the ability to think hypothetically and weigh possible futures and evaluate the varied consequences of their actions. A major finding then of developmental research over the last two decades is that there appear to be few differences between minors (younger or older)

and adults in decisionmaking skills or competence. When differences do emerge, researchers have generally attributed them to differences in knowledge or experience rather than to differences in actual reasoning capacity. In fact, it is widely acknowledged by researchers who study formal operational thinking that the overwhelming majority of adults never develop better reasoning skills than what they achieve in early adolescence, although adults may act better based on accumulated experience. As a result, experiential learning becomes an important component in the ongoing development of competence to reason.

Psychologists have established a firm research foundation for setting the threshold of the competence to consent in the age range of twelve to fourteen years old. Studies exploring the developmental issues within contexts such as consent to medical treatment or experimentation, special education placement and services, and even waiver of Miranda rights have reached similar findings regarding the ability of certain minors to be competent decisionmakers. As a result most states in the United States have statutes that require family court judges to solicit and consider a child's expression of custodial preference in divorce hearings or that require some young teens to be tried as adults in the criminal justice system.

Moreover, while developmental psychology has provided substantial empirical support for giving significant weight to the reasoned views of those fourteen and older and for allowing the participation of younger children in certain decisions, such as custody arrangements, in fact, the psychological perspective emphasizes the importance of individual evaluation that is task-specific. Thus, the child's right to consent to psychotherapy, the child's right to participate in custody decisionmaking, and the child's right to privacy in reproductive health decisions present different reasoning challenges and carry different consequential considerations. Developmental psychologists are cautious to point out that research on children's competence to consent can contribute to the public discussion of whether and under what circumstances children have a right to consent, but cannot completely determine the answer which remains a legal and ethical one.

Kathleen Alaimo

CHILDREN AND JURISPRUDENCE

The place of children in the jurisprudence system of the United States has evolved dramatically since the nation's founding. In the common law traditions imported from England, children seemed to be little more than their father's property. The spread of classical liberalism and legal egalitarianism as embodied in the American Declaration of Independence and the Bill of Rights did not alter the status of children under the law. In contrast, the industrial revolution had a dramatic, if paradoxical, effect. Initially, industrialization seemed to cause deterioration in the status of children particularly in areas such as apprenticeship. Traditionally, apprentices might look forward to learning a skill from a master artisan but under the assault of industrialization, young workers found themselves engaged in increasingly unskilled or semiskilled labor, unprotected by apprenticeship contracts that had formally stipulated work conditions and living accommodations, skills to be taught, and the duration of the apprenticeship term. Apprenticeship contracts, enforceable in court, provided some protection not only to the child apprentice but also to his or her family. As industrialization spread, so too did the demand for cheap, unskilled, pliable workers. This contributed not only to the decline of the artisanal trades but also to the virtual elimination of apprenticeship contracts. The child laborer emerged as a symbol of industrialization's devastating impact on the skilled crafts. In time, the plight of child laborers caught the attention of social reformers who made the legal regulation of child labor a passionate cause. From the regulation of child labor to other aspects of child welfare, the state and the courts became increasingly involved in the disposition of children's lives. Thus, eventually industrialization brought children into the legal environment as legitimate concerns of the state, not "father's property." The 1874 case of "Little Mary Ellen Wilson," an abused New York child who was rescued through the use of anti-cruelty to animals statutes (Alaimo 2002, Hawes 1991), led not only to the founding of the Society for the Prevention of Cruelty to Children but also to more persistent intervention into the privacy and autonomy of the family based on the premise that even children have some rights.

By the early twentieth century, American jurispru-

dence came increasingly to recognize not only the specific interest of child welfare but also the maternal interest in children's well being. The concept of the "best interest of the child" became more widely applied, especially in negligence and custody cases involving poor children. One result is that courts began to support poor mothers in their efforts to rear their children, including illegitimate children. And state legislatures established funding programs to support poor children within their families. A 1911 Illinois law, known as Funds to Parents, pioneered the requirement that juvenile court orders state support to worthy parents of troubled children. Within a few years, thirty-nine states as well as the territories of Alaska and Hawaii had established funds to support poor children in their own homes. To some extent this development suggests an effort to recognize the rights of children to maintenance, support, care, family, and home while at the same time attempting to preserve the family and the role of parents. The state, acting through the courts, became the "superparent," supervising the family and dissolving the old common law relationship between parents and children that had protected the autonomy of parents in childrearing (Mason 1994, Fass and Mason 2000, Alaimo and Klug 2002).

Beginning in the late 1960s, a new trend emerged in American jurisprudence regarding children. An increasing number of court cases sought to clarify, and in some cases expand, the legal rights of children. While court cases from the late 1960s through the late 1980s failed to establish a clearly consistent set of principles and interpretations, one important and influential claim emerged: the legal principle that children do indeed have (some) rights under the United States Constitution. This principle emerged as a result of an increasing number of cases brought before the courts that raised questions about the rights of children to education, free speech, privacy, and due process, and the disposition of the rights of children in relation to the rights of parents.

In general, the status of children in American jurisprudence is not dictated by universal or consistent criteria. Rather, there is a great deal of variability in the legal status of minors. As implied in the introduction to this chapter, children are treated differently depending on whether the issues concern tort law, contract law, civil rights law, family law, or other matters. In some areas, children are treated with a

highly "protectionist" hand while in other areas they are given responsibility for their actions. Changing attitudes towards the rights of parents as well as better understanding of the evolving capacities of children have played a role in how the courts treat minors. Nonetheless, the result has been to produce a body of case law that moves between two poles: one giving young people a greater amount of autonomy in decisionmaking about their own lives and the other protecting young people from others, their environments, and even themselves. In current jurisprudence, young people have a measure of control in decisions about reproductive health, including abortion, as well as in decisions relating to legal emancipation. In contrast, the law protects, and thereby limits the autonomy of, young people in areas such as contracts, employment, and free speech.

A number of landmark cases have shaped the place of children in American jurisprudence. In particular, the United States Supreme Court decided a number of important cases in the twentieth century concerning children's rights, parents' rights, and state authority, marking a departure from the federal courts' long-standing practice of avoiding family law. In *Meyer v. Nebraska* (1923) and *Pierce v. Society of Sisters of the Holy Names of Jesus and Mary* (1925), two cases that are often viewed as early examples of "children's rights" in the courts, the most pressing issue at stake involved the rights of parents to raise their children as they saw fit without interference by the state.

In *Meyer v. Nebraska*, which involved an appeal from a teacher convicted of violating a 1919 Nebraska statute against the teaching of foreign languages in public or private schools, the Court supported the teacher as well as students and parents against unreasonable intervention and regulation of the state. The Court noted that students have a right to learning opportunities and parents have a right to engage teachers to instruct their children in subjects they deem valuable. At the same time, the Court acknowledged the right of the state to compel school attendance and to make reasonable regulations for schools. The Court concluded: "It is well known that proficiency in a foreign language seldom comes to one not instructed at an early age, and experience shows this is not injurious to the health, morals, or understanding of the ordinary child" (Wadlington et al. 1983). While this case has often been identified as a pioneer case in the rights of children, in fact the teacher was the plaintiff and

the role of parents in determining the education of their children (a “right of control”) figured prominently. The liberty interest of children occupied a modest place in the decision.

In *Pierce v. Society of Sisters* the Supreme Court again supported the rights of parents against state authority in an educational matter. The Oregon law in question required every school-age child, with few exemptions, to attend a public school. The Society of Sisters had operated orphanages, schools, and colleges for over forty years providing both secular and religious education. The Society argued that parents had the right to the school of their choice and that children had the right to influence their parent’s choice. Following the principle established in *Meyer v. Nebraska*, the Court acknowledged the state’s interest in requiring school attendance but argued that the statute unreasonably interfered with the liberty rights of parents to direct the education of their children. The Court used broad language in its decision, including the right of parents to direct their children’s “upbringing.” The Court concluded: “the fundamental theory of liberty . . . in this Union . . . excludes any general power of the state to standardize its children by forcing them to accept instruction from public teachers only. The child is not the mere creature of the state” (Wadlington et al. 1983).

In contrast to its rulings in *Meyer v. Nebraska* and *Pierce v. Society of Sisters*, the Supreme Court in *Prince v. Massachusetts* (1944) favored the right of the state to interfere in the decisions of parents with regard to the upbringing of their children. The case involved a guardian (an aunt) who provided her charges with religious pamphlets to be sold on the streets, thereby violating a Massachusetts statute prohibiting children from selling print materials in public places, part of the state’s comprehensive child labor law. Mrs. Prince indicated that the children themselves asked to participate in the street sales of Jehovah’s Witness materials. The Court ruled that the state had an interest in protecting children and that neither children’s rights to religious freedom nor parental rights are absolute. The Court noted that the state often acts to restrict parents’ rights to autonomy through measures such as child labor regulations and compulsory school attendance. The Court reasoned that the state had greater authority to regulate the activities of children than those of adults, especially public activities and employment, and that

it would be ludicrous to think that children should have the same access to public places and public activities as adults. And although the Court conceded that “it is true children have rights, in common with older people, in the primary use of the highways” it nonetheless demonstrated its willingness to affirm legitimate state interest in the “health and welfare” of its future citizens and to circumscribe the autonomy of parents: “Parents may be free to become martyrs themselves. But it does not follow they are free . . . to make martyrs of their children before they have reached the age of full and legal discretion when they can make that choice for themselves.”

In 1968, the Supreme Court reinforced its stance in *Prince* in a case that revolved around the sale of sexually explicit print material to a sixteen-year-old minor. In *Ginsberg v. State of New York*, the Court again argued that the state had greater authority in the regulation of children than adults and that the state had a compelling independent interest in the well being of children. Since the materials in question were not regarded as obscene for adults (persons seventeen years of age or older), the Court affirmed that it was constitutionally valid to regulate the dissemination of pornography to children based on the notion that the concept of obscenity can vary depending on the population targeted. The Court denied that such regulation infringed on parents’ rights to autonomy in the upbringing of their children, arguing that parents could purchase pornography for their children if they so wished but that the state had an obligation to regulate the direct sale of pornography to children since “parental control or guidance cannot always be provided.”

By the late 1960s and into the 1970s, a barrage of cases involving children’s rights emerged. While some of these cases continued to mediate the relationship between parents’ rights and the state’s role of *parens patriae* (parent of the state), increasingly the focus came to be on the distinct issue of children’s rights—to free speech, to due process. *Tinker v. Des Moines Independent Community School District* (1969) has been characterized as the first genuine children’s rights case decided by the Supreme Court. The case involved the right of junior high and high school students to wear black armbands protesting the American war in Vietnam despite a school policy prohibiting this. The students wore the protest armbands and then were suspended from school and

sent home when they refused to remove them. Treated as a First Amendment issue, the Court decided that students' rights to freedom of expression outweighed the school's concern for order and discipline. Noting that the students' armband protest did not cause any disruption in school, the Court supported the students' right to express an opinion. In a statement that has become famous, the Court wrote: "It can hardly be argued that either students or teachers shed their constitutional rights to freedom of speech or expression at the schoolhouse gate." Interestingly, one of the concurring justices nonetheless questioned whether children's rights are "co-extensive" with those of adults and opined that children do not possess the "full capacity for individual choice which is the presupposition of First Amendment guarantees." It should be noted that the suit was filed by the fathers of the students' involved, leading some legal scholars to claim that the Court was really supporting parents' rights or family rights and not affirming the right of children to exercise choice rights independent of their parents.

In 1975, the Supreme Court decided the case of *Goss v. Lopez* in which students had been suspended from school without notice or an opportunity for a hearing. Claiming that compulsory education laws at the state level had the effect of creating a property interest, or a right to education, the Court ruled that students were therefore constitutionally entitled to due process before they could be deprived of their property through suspension, even for short periods of time. The Court did not concede that students were entitled to full-blown due process considerations such as "the opportunity to secure counsel, to confront and cross-examine witnesses . . . or to call his own witnesses." Rather the Court declared, in a very close ruling, that some type of notice and effective hearing are required to permit "the student to give his version of the events." The dissenters questioned the impact of due process considerations, such as formal hearings, on the ability of school administrators to carry out effective discipline. The Supreme Court revisited this issue in *Ingraham v. Wright* (1977), a case concerning corporal punishment in the schools. The Court decided that corporal punishment did not constitute "cruel and unusual punishment" but represented a historically accepted manner of discipline with common law restraints available. Secondly, the Court declared that it was

unnecessary to impose "additional administrative safeguards" of a due process nature because these would unduly interfere with the school's ability to carry out disciplinary policies. The Court noted that this case was different from *Goss v. Lopez*, because corporal punishment did not result in students being deprived of their property interest in education. Taken together these two cases suggest a very tentative movement toward recognizing that children might be protected under the Fourteenth Amendment's due process clause but not a strong trend in that direction.

Another important area of jurisprudence in the 1960s and 1970s, which has continued to the present day, concerns changes in the juvenile justice system. In the first quarter of the twentieth century, ambitious efforts to create special courts for juveniles came to fruition, first in Illinois (1899), and then across the nation. Several distinctive features marked the new world of juvenile justice. First, not only delinquent but also neglected and dependent children under sixteen would be handled in the new courts. Second, the new courts aimed at rehabilitation not punishment. Third, to avoid creating any social stigma, all proceedings would be confidential, if recorded at all. Fourth, separate facilities for the detention of children were required. And fifth, juvenile court proceedings would operate "informally," that is not according to traditional legal models but more in accord with the growing therapeutic aims of medical and psychological care. The reformers who helped to create this new system were motivated by a myriad of concerns, including a very real interest in redefining childhood and adolescent dependency, limiting parental autonomy rights, and expanding the role of the state in the guise of professional social workers. The reformers were little concerned with a child's liberty or its parents' autonomy and more concerned with the need to protect, care for, and save troubled children. An extremely expansive vision of juvenile delinquency, its causes, and its cures, shaped the founding of the juvenile justice system in the United States. This included a significant increase in the number of "status" offenses—actions that constituted misdemeanors only if committed by a minor, such as curfew violation or cigarette smoking. The course of the twentieth century demonstrated the difficulties facing reformist social welfare goals while the denial of legal protections to young offenders created other

serious problems. With juvenile courts historically understaffed and overworked, the innovative possibilities imagined in the establishment of community-based supervision and probation were limited. Many juvenile court judges lacked specialized training in children's law and often did not have the adequate services of probation officers, psychologists, or social workers. Soon, the absence of certain procedures in juvenile hearings, such as notice of the charges, right to an attorney, protection against self-incrimination, right to a transcript of the hearing, and right to appeal seemed less tolerable when social services were in short supply.

The 1966 Supreme Court case of *Kent v. United States* marks the first attempt to visit the question of oversight and monitoring of the juvenile justice system. In that case, the Court observed "There is evidence, in fact, that there may be grounds for concern that the child receives the worst of both worlds: that he gets neither the protections accorded to adults nor the solicitous care and regenerative treatment postulated for children." The next year, in what became a landmark case, the Court took up *In re Gault*, another case concerning the due process rights of juvenile offenders. The Court took the stand that due process of law, fundamental to American freedom, has a place in juvenile proceedings. In other words, the mere fact of being a child does not mean that legal protections are unnecessary: "Under our Constitution, the condition of being a boy does not justify a kangaroo court. . . . So wide a gulf between the State's treatment of the adult and of the child requires a bridge sturdier than mere verbiage, and reasons more persuasive than cliché can provide." However, the Court did not go so far as to say that minors were entitled to all the due process provisions to which adults enjoyed access in the criminal justice system. In fact, the majority opinion noted that the introduction of some due process requirements would make the juvenile court more orderly but not necessarily unkind.

Following *Kent* and *Gault*, the trend in juvenile justice has been to increase the procedural rights available to juvenile offenders while at the same time increasing their legal responsibility. Transfers between juvenile court and adult court have increased dramatically. Belief in the rehabilitative ideal has faded, evidenced by the reintroduction of capital punishment not only for adults but even for mature mi-

nors. Juveniles facing the adult criminal system are less likely to receive special consideration due to age. Still, the juvenile court system has been successful not only in the United States but also throughout a large part of the world and its basic premise is articulated in the United Nations Convention on the Rights of the Child. Keeping young offenders out of adult criminal courts is still a widely held goal and successful practice, despite rejection of the original and highly interventionist goals of juvenile court, founders. The post-*Gault* period in juvenile justice has been marked then by the tense co-existence of two principles: increasing due process provisions for youth and continued consideration of the social welfare needs of youth. The 1974 *Juvenile Justice and Delinquency Prevention Act* (Zimring 2000) stands as the first major federal legislative initiative following *Gault*. It aimed to finally separate youth offenders from adults in confinement, and it aimed to deinstitutionalize status offenders, such as truants and runaways. As law-and-order toughness spread across the United States criminal system in the 1980s and 1990s, the rate at which young adults (age eighteen to twenty-four years) were incarcerated in prisons far outstripped the rate for juveniles (age fourteen to seventeen years), suggesting that the juvenile justice system continued to succeed in meeting the goal of protecting youngsters from the reach of the harsh adult criminal justice system, the original goal of the juvenile court system. Despite a number of shocking and high-profile cases of youth violence and criminality which has fostered a fear of "juvenile super-predators" and calls for tougher treatment, the juvenile court system still offers a "jurisprudence of patience and restraint" (Zimring 2000, 2494) with regards to youth offenders who are engaged in the developmental process of growing-up. Not only the courts but also the public still accept the idea that young people are not fully responsible for their trespasses and therefore should be given the second chances afforded by the juvenile justice system.

The law related to custody and parenting rights has undergone dramatic change in the last twenty years. Neither the common law notion of "father's property" nor the modern idea "maternal preference" dominates custody law. Instead, the principle of "best interest of the child" has emerged as the legal standard, meaning that judicial decisions ought to advance the child's interest. The best interest standard

requires a rigorous mode of rational decisionmaking on the part of the judge. To apply such a standard, a judge must have sufficient information, the ability to make predictions of probable outcomes, and a value system to inform the choice. Researchers in the field of psychology have offered conflicting findings on matters related to predicting and evaluating the possible consequences of various dispositions for children in custody conflicts. Moreover, the best interest standard has been called "indeterminate" because it allows too much personal bias to enter into decisionmaking. In custody cases that involve placements with adults other than biological parents, the "best interest of the child" principle seems to promote the idea of "psychological parenthood." This radical idea emphasizes the ability of an adult to meet the child's need for both psychological and physical well being on a daily basis without regard for the privilege of biological parenthood. Despite the considerable challenges involved in applying the best interest of the child standard, it remains a relevant legal standard in American family jurisprudence. Contemporary controversy revolves around how to ascertain the best interest of the child and present it in court.

Several highly publicized cases underscore the challenges in weighing parents' rights and children's preferences. In the 1980s, Walter Polovchak and family arrived in the United States from the Soviet Union. Soon the parents decided they wanted to return to the Soviet Union but their son insisted on staying in the United States. He ran away from his parents and was soon granted political asylum and made a ward of the state. Despite what looks like a case of a child's preference trumping his parents' rights, this case (*Polovchak v. Meese*, 1985) must be seen in light of Cold War politics of the 1980s. Even the American Civil Liberties Union questioned whether parents could be deemed unfit just because they wanted to return to their homeland.

A similar case surfaced in 1999 regarding Elian Gonzales, a five-year-old child refugee from Cuba. His mother and stepfather had died while trying to leave Cuba when their overloaded boat capsized in the waters between Cuba and Florida. Rescued by fishermen and brought to a Miami hospital for treatment, U.S. Immigration and Naturalization Service (INS) then placed Gonzales in the custody of Cuban exile relatives in Miami, although his father and grandmother still lived in Cuba. A legal battle, as

well as a political battle, ensued. The legal issue involved the father's right to custody of his child unless he could be proved negligent or abusive, but it also mixed family law with immigration law, especially laws governing political asylum. The political issue drew anti-Cuban and anticommunist sentiments into the mix. Lawyers for the INS and eventually the U.S. attorney general argued that the "best interest of the child" principle required that Elian be reunited with his father, other Cuban relatives, his schoolmates and teachers, and his hometown. Elian's Miami relatives filed petition after petition to keep him in the United States and in their care, which they believed offered him a better future. Protests abounded as the question of who had the right to speak for Elian sharpened. Hardly anyone agreed that Elian, by then six years old, had the capacity to contribute anything to the discussion. In April 2000, armed federal agents stormed the Miami home in which Elian had been living, took him from a closet in which he had been hiding, and flew him to a rendezvous with his father. In June 2000, a federal appeals court ruled that Elian Gonzalez did not have the right to an asylum hearing, as a result of petitions filed by his Cuban American uncle and under his own name. A few weeks later, the U.S. Supreme Court rejected a last minute appeal and Elian returned to Cuba with his father. To a large extent political issues overshadowed the children's rights issues in this case. Does a six-year-old child have the capacity to apply for political asylum? If not, who can best represent the interests of the child? Does the child's parent, even if from a communist state like Cuba, have a certain privilege to speak for such a child? The federal appeals court agreed with the reasonableness of the INS's position that a six-year-old did not have sufficient capacity, and compared this to the Polovchak case when a twelve-year-old was regarded by the courts as being "near the lower end of an age range in which a minor may be mature enough to assert" an independent asylum claim. In fact, the court supported as reasonable the decision of the INS to weigh the competing interests of the child, the parent, and the public but to give "paramount consideration to the primary role of parents in the upbringing of their children." Significantly, Elian's "right" to maintain his relationship with his biological father, who although divorced from Elian's mother had had regular involvement with Elian, re-

ceived only limited discussion in the public debates. The case highlighted the difficulties of applying the “best interest of the child” principle in cases of very young children who may not be able to articulate their own interests and underscored the need for independent child advocates. Even more so it highlighted the difficulties of making reasonable decisions in a heated political situation.

In the highly charged 1992 Florida case of Gregory Kingsley, the conflict between parental rights and children’s rights exploded. In this case, twelve-year-old Gregory won the right to hire his own attorney and file a petition to terminate his mother’s parental rights. Although the case was widely reported as an attempt to “divorce his parents” it was more importantly about the right of a child to be heard in court. Gregory’s mother had placed him in foster care. He came to believe that she was a negligent parent who had abandoned him and that he deserved a chance for a better life. He wanted to terminate her parental rights so his foster family could adopt him. Termination of parental rights is not easily arrived at; it requires convincing evidence of abuse, neglect, or abandonment. The case was complicated by the fact that Gregory’s mother was divorced, unemployed, and poor while his foster family was well off. The central legal feature of this case was whether or not Gregory had the legal standing, that is judicial personhood, to sue in court as a minor, despite his young age (eleven at the time of the initial proceedings). In addition, the case raised questions about whether or not children have a right to adequate parenting, which in turn raises questions about what constitutes “adequate” or “negligent” parenting and who decides. Finally, the case highlighted the crisis that millions of children in state care face. Before placement with the family he wanted to adopt him, Gregory had been moved around the state’s foster care system so much that he begged simply for “a place to be.” Following widespread media and public frenzy, the Florida Court of Appeals overturned Gregory’s right to sue in court, saying he lacked the capacity to do so. Then the protective services agency responsible for Gregory filed its own petition to have his mother’s rights terminated; the court granted this petition and Gregory’s adoption by his foster family was allowed to stand. As Lewis Pitts, director of the Legal Action Project of the National Committee for the Rights of the Child has

stated, “In short, the court recognized that Gregory had a meritorious claim, but denied his right to knock at the courthouse door on the grounds that he was a minor” (Pitts 2002, 168).

Thus despite a growing tendency to recognize that children are persons under the Constitution, there are still many areas of the law that continue to treat children and adults differently. Court decisions have continued to limit the rights of students in schools to free expression and privacy. In *New Jersey v. T.L.O.* (1985), school authorities were given a less restrictive standard to meet regarding searches of students’ possessions on the ground that they are responsible for maintaining an orderly environment. *Hazelwood School District et al. v. Cathy Kuhlmeier et al.* (1988) found that schools could impose reasonable restrictions on the content of school-sponsored publications without being in violation of students’ First Amendment rights. And in 1995, the United States Supreme Court allowed the practice of random drug testing of student athletes to stand (*Vernonia School District v. Acton*). These and other cases suggest that the expansion of legally recognized rights for children has not been unlimited.

History, legal precedent, social science research, and philosophical reflection shape contemporary American jurisprudence regarding children. The result is that children have more explicitly delineated rights that are recognized in courts of law than at any other time in history. Not only do children enjoy constitutionally guaranteed rights to due process in juvenile court proceedings but also they often have access to lawyers whose assigned duty is to represent the voice and interest of the child. Medical practitioners recognize that children have the right to refuse treatment and are learning how to support such decisions. With the findings of developmental psychology, children and their counsel have been able to convince courts that competence to obtain an abortion, refuse mental health treatment, mount a defense, or request particular custody arrangements does not set in arbitrarily at age eighteen or twenty-one.

The place of children in American jurisprudence had changed dramatically in recent decades. At least in principle, the U.S. Supreme Court and lower courts have recognized that a child is a person with rights and should be treated as such. In practice, there is substantial disagreement about whether this means

that children should be treated like adults. The state of jurisprudence suggests that lawyers, judges, researchers, and scholars have not yet developed principles and criteria for determining consistent policy and law related to the decisionmaking capacity and legal responsibility of children. The most promising new direction in this regard is the call for a jurisprudence regarding children that emphasizes processes of involvement by various parties with potentially diverse interests. In this scenario, the acknowledgment of children's rights in the courts means that lawyers and judges must consider children's particular needs and voices in the balancing act that precedes a decision.

Kathleen Alaimo

CHILDREN'S RIGHTS WORLDWIDE

Any discussion of children's rights in the world of the twenty-first century must weigh the contrast between the reality of impoverishment and mortality that characterizes the lives of so many of the world's children with the significant progress that the idea of children's rights has made in international treaties, national charters, and public policy. For example, the United Nations Convention on the Rights of the Child (UNCRC) is the most widely ratified international human rights treaty in the world. When the United Nations opened the convention for signatories in 1990, the opening day broke records for the number of nations to sign on. It obtained the required number of signatures faster than any other human rights treaty. Today, it has been ratified by nearly all member nations of the United Nations with the significant exception of the United States (where it has been signed by the President but not ratified by Congress). As the European Union moves towards greater integration and cooperation, its constitutional convention produced a draft constitution in 2003 that makes several references to the protection of children's rights. Moreover, advocacy on children's rights is not limited to the West but has been embraced from Pakistan to South Africa, from Vietnam to Brazil. Implementation and monitoring of the relatively new African Charter on the Rights and Welfare of the Child (1999) has been led by the African

Network for the Prevention and Protection Against Child Abuse and Neglect (ANPPCAN). In Venezuela, an organization known as MOANI is led by children and young people to facilitate promotion of children's rights, especially in poor urban and rural communities. UNICEF, established in 1946 and perhaps the best known of the international children's protection organizations, has made children's rights central to its work during the last decade. Children's rights have become part of the international dialogue.

The UNCRC is a pivotal document in the development of the international children's rights movement. The near universal ratification of the UNCRC gives it significant international legitimacy and most of its provisions have taken on the status of international customary human rights law. The UNCRC includes forty-five substantive articles introduced by a brief preamble. After defining a child as "every human being below the age of eighteen years," the UNCRC identifies the conditions nations (referred to as "States Parties" in the convention) must protect in order to ensure that children are able to enjoy their inalienable human rights. A key feature of the UNCRC is the emphasis it places on the role of the family in the upbringing and care of the child and the obligation it assigns to the state to provide parents with the assistance and resources needed to rear their children. Various articles support family integrity and unity. Article 18 states that parents have the *primary* role in the upbringing and development of the child. At the same time, the UNCRC states that the child's best interest should be "*a* primary consideration" in "*all* actions concerning children, whether undertaken by public or private social welfare institutions, courts of law, administrative authorities or legislative bodies." Article 18 states that parents or legal guardians should have as "their basic concern" the best interest of the child. And the UNCRC declares that children who are competent to form their own views ought to have the right to express those views, directly or through a representative, and to have their views given "due weight in accordance with the age and maturity of the child." The concept of "evolving capacities" is repeated throughout the convention. As with most rights documents, the UNCRC acknowledges that rights are not absolute and may be regulated by law for purposes of national security, public safety, public order, or the protection of the rights of others. The UNCRC also ac-

knowledges and accommodates cultural differences across the diverse world. Specific provisions discuss adoption, refugee situations, children with disabilities and special needs, health measures, social security measures, living conditions, education, minority rights, recreation, cultural identity, labor, illicit drugs, sexual exploitation, due process, juvenile corrections, and armed conflicts. The UNCRC is comprehensive in its approach to children's rights, incorporating civil and political rights as well as economic, social, and cultural rights, all within a human rights framework.

A very important feature of the UNCRC is the extent to which it emphasizes goals for nations to work toward in realizing children's rights. For example, article 28 declares that nations will "recognize the right of the child to education" but continues by urging states to work toward "achieving this right progressively and on the basis of equal opportunity." The rest of the article describes a "progressive" plan: first, universal, compulsory, free primary education; then "encourage the development" of various kinds of secondary education programs and aim to make them available and accessible to all; make higher education available to those who are capable; take measures to encourage school attendance and reduce drop-out rates. The child has a right to an education that contributes to "the development of the child's personality, talents and mental and physical abilities to their fullest potential." And the UNCRC calls for international cooperation to eliminate illiteracy and to assist developing nations.

Acknowledgment of children's rights as an essential aspect of the international human rights agenda has resulted in a number of important international initiatives. Since 1990 when the UNCRC entered into force as a result of its ratification by the required number of nations, activity in support of children's rights has heightened. Governments and nongovernmental organizations (NGOs) have developed policy statements, sponsored conferences, held hearings, and litigated legal issues related to children's rights. The World Summit for Children, attended by governmental officials from over eighty nations, produced the "World Declaration on the Survival, Protection, and Development of Children" in 1990, emphasizing the need to protect and care for the world's children. The following year the monitoring committee established by the UNCRC, the Committee on the Rights of the Child, held its first meeting

in Geneva and in 1993 it reviewed the first reports submitted by States Parties. In the meantime, the American Civil Liberties Union Children's Rights Project began to litigate cases on behalf of children served by social welfare agencies. To implement Article 21 of the UNCRC concerning intercountry adoption, the Hague Conference on Private International Law finalized a treaty in 1993, known as the Hague Convention on the Protection of Children and Cooperation in Respect of Intercountry Adoption, stipulating rules and procedures for the placement of children in foreign countries. In 1995, a coalition of children's rights and advocacy groups came together to form the European Children's Network to lobby for the inclusion of children's rights in the EU Treaty. The second World Congress Against the Sexual Exploitation of Children was held in Yokohama, Japan in 2001, organized in part by an NGO devoted to eliminating child prostitution in Asian tourism. In 2000, massive preparations began to launch a United Nations General Assembly Special Session on Children (UNGASS) for September 2001. Postponed due to the terrorist attacks of September 11 in the United States, the meeting eventually took place in May 2002 and produced an action plan titled *A World Fit for Children*, adopted by 180 nations (UN General Assembly 2002a). Significantly, the document resulted from the collaboration of governments, NGOs, and children and young people themselves. The twenty-one goals set out for the next decade focused on key areas of action: elimination of childhood poverty, quality education for all children, protection of children against abuse and exploitation, elimination of HIV/AIDS among children and their families, and environmental protection for present and future generations. The plan reiterated the need to "put children first" by making the best interests of the child a primary consideration in all actions related to them and to "listen to children and insure their participation."

Between the 1990 World Summit for Children and the 2002 UNGASS on Children the focus on children's rights in addition to children's needs heightened measurably. *A World Fit for Children* highlighted the importance of the UNCRC, recognized the progress that had been made in improving the material living conditions of many of the world's children, acknowledged the primary role of parents and families in the care of children, called upon the

entire global community to work toward creating a world fit for children, and reaffirmed the need to respect the human dignity of each child and to promote and protect the rights of each child (UN General Assembly 2002a). The document makes special mention of the rights of girls and indigenous children but does not neglect the special hazards facing boys. The document urges cooperation between many entities to achieve a world fit for children: parents and families, local governments, legislators, NGOs and community groups, corporations, religious institutions, mass media organizations, regional and international bodies, people who work with children, and of course, children themselves. While the document set specific targets and goals for achievement by the year 2015, three general goals stand out: providing children with the "best possible start in life," quality primary education, and the ability to develop individual capacities. Some of the specific goals included reductions in infant and children mortality, increases in childhood immunizations, expansion of early childhood care and education, elimination of gender disparities in education, increases in literacy, elimination of the worst forms of child labor exploitation, development of legal systems to protect children's rights in the justice system, and protection of children from armed conflict. Most of these goals were defined in terms of statistically specific targets.

Worldwide then the discourse of children's rights appears to have reached a crescendo, if the participation of over seven thousand people at the UNGASS on Children is any indication. Four hundred children attended the special session, while youth representatives from several countries addressed the General Assembly. Prominent figures such as Nelson Mandela, Carol Bellamy, and Bill Gates Jr. participated alongside hundreds of high-level government representatives. At the same time, the UNGASS underscored the lack of progress on the well being of children around the world since the adoption of the UNCRC. The thousands of pages of supporting and official documents generated before and after the special session provide volumes of information on the state of the world's children.

Although worldwide infant and child mortality have declined in recent decades, and all countries have been able to report national declines, still it is estimated that 10 million children die annually (about 30,000 children a day), most as a result of malnutri-

tion or preventable diseases such as measles or diarrheal dehydration. In the developed world, child mortality has dropped from 43 per 1,000 births in 1960 to 8 per 1,000 in 2002. In the developing world, the progress has not been as great, dropping from 224 per 1000 births in 1960 to 89 per 1,000 in 2002. Malnutrition afflicts 150 million children, while HIV/AIDS is spreading most rapidly among women and children. HIV/AIDS has left 13 million children orphaned. During the 1990s, over two million children died as a result of armed conflicts while many more were seriously injured. It has been estimated that there are more than 300,000 child soldiers at any one time, many recruited through force. Since one-third of annual births go undocumented, information about the age of child soldiers and child laborers is often hard to verify. Half of the world's refugees are children—about 20 million. Moreover, 120 million children do not attend school and the majority of these are girls, about 65 million worldwide. One-third of all children obtain less than five years of schooling, which is regarded as the minimum amount needed to acquire basic literacy.

Child labor poses especially difficult questions. The labor of children is often necessary and useful for millions of families around the world, especially in poor and rural communities. Nor is all child labor harmful or exploitative. Advocates of children's rights worldwide do not seek the complete elimination of child labor but rather emphasize the prohibition and elimination of the "worst forms" of child labor—defined by the UNCRC as "any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development." Child labor is highest among children who are not attending school.

One out of six children perform work that is considered damaging to their mental, physical, and emotional development. Most child laborers worldwide work in agriculture where they are exposed to dangerous chemical pesticides and fertilizers and must use dangerous equipment such as machetes. Still others work the streets of the cities running errands, hawking goods, or prostituting their bodies. Some domestic labor among children is a cover for child slavery and child trafficking. Girls make up the vast majority of domestic child workers. With so much of their work done in the privacy of homes, behind

closed doors, experts believe that they are at high risk for exploitation and the denial of rights. In some developing countries, child labor is on the rise even though a 2004 study of the economic costs and benefits of eliminating child labor suggests that the benefits will significantly outweigh the costs.

An indication of things to come may be found in India, the second most populous nation in the world, the world's largest democracy, the nation with the largest number of illiterates in the world and with a widely reported child labor problem. In 2002, India's parliament adopted the *86th Constitution Amendment Act* adding to the list of fundamental rights, the right to education. The Indian Constitution now affirms that all children have a right to eight years of free, compulsory, elementary education between the ages of six and fourteen. Since nearly every state in India already had a compulsory education act, the implications of this new amendment remain in how it is operationalized and what it means, practically and theoretically, to assert a right to education.

Kathleen Alaimo

CHILDREN'S RIGHTS IN THE UNITED STATES

Change has always characterized the place of children in the United States and this is certainly true in the contemporary world of rapid change. Ambivalence has always characterized the way in which adults in the United States think about children. For example, although the definition of the child as any human being under the age of eighteen years has simple appeal, it in fact obscures much. Many institutions and programs in the United States function in ways that depend on careful calibration of age grading. In some settings, it seems appropriate to extend the protections of childhood to those up to twenty-one years of age. In other situations, rights and responsibilities are recognized at much younger ages, such as fourteen or sixteen.

Concern about children and childhood as a matter of public policy has been evident in the United States since the early twentieth century. Beginning in 1909, and continuing nearly every decade since then,

the White House has sponsored conferences dealing with the conditions and needs of children. Academics, health and legal professionals, social workers, psychologists, educators, community leaders, and others participated in these gatherings. The first White House Conference on Children, chaired by President Theodore Roosevelt, led to the creation of a new federal agency, the Children's Bureau, which has since evolved into the cabinet-level Department of Health and Human Services. The 1919 conference, following the First World War, drew international participants and focused on child labor, maternal and infant health, and child protection. The 1930 conference, at the start of the Great Depression, drew over 1,200 participants and led to the formulation of a national "Children's Charter." This document was one of the first to recognize the "rights of the child as the first rights of citizenship." Pediatric care and labor protections received special attention as a result of the 1930 conference. By 1940, the White House Conference on Children (Story of the White House Conferences on Children and Youth 1967) focused on "how a democracy can best serve its children and how children can be helped to grow into the kind of citizens who will preserve democracy." The importance of developmental psychology was evident in the 1950 conference's emphasis on children's emotional and mental development. On the eve of the turbulent 1960s, the White House Conference on Children and Youth attracted eleven thousand people who devoted much time to discussions of juvenile delinquency, schooling problems, and drug use. The 1970 conference focused on racism, child abuse, and childcare among other issues and helped lead to the formation of a new cabinet-level Department of Education. The 1980 conference focused on families and children including the impact of divorce and mobility. President Jimmy Carter asked each state governor to appoint an official responsible for children's issues. The 1990s witnessed a proliferation of White House sponsored conferences on children, especially during the years of the Clinton administration.

Central to the discussion of children in the United States, especially in the last thirty years, is the relationship between children's needs and children's rights. The contemporary trend has been to emphasize children's rights, the notion that children have inalienable rights due them as human beings and under the

law. This has fundamentally shifted the discussion of children's place in the United States, even though the concerns may seem similar to those articulated in the early twentieth-century era of child-saving efforts, such as adequate health care or schooling. When children's needs are transformed into children's rights, the obligation to meet them is intensified.

The origins of this trend appear to coincide with the height of the civil rights and women's liberation movements of the 1960s. Indeed, *Brown et al. v. the Board of Education of Topeka et al.* (1954), a landmark case in the history of desegregation in the United States, suggests a nascent intersection of civil rights and children's rights. In overriding the infamous "separate but equal" doctrine of segregated public facilities, the Supreme Court argued that equal opportunity to education was a key to children's future success. The opening lines of the decision specifically identify "children"—"white and Negro"—as the focus of the issue. It was "Negro children" who were being denied equal protection under the Fourteenth Amendment.

In a pioneering article that first appeared in 1973 in the *Harvard Educational Review*, Hillary Rodham, of the newly established Children's Defense Fund, wrote, "The phrase 'children's rights' is a slogan in search of a definition. . . . Asserting that children are entitled to rights and enumerating their needs does not clarify the difficult issues surrounding children's legal status." Since that time, the discussion of children's rights in the United States has clarified much but the ongoing tension between needs and rights continues. It is the unique status of children as both dependent but also capable of evolving independence that contributes to so much of this tension. Moreover, the failure of both proponents and opponents of children's rights to fully appreciate the differences of age and capacity among children under age eighteen adds to the confusion.

The most notable impact of the contemporary children's rights movement in the United States is the attention it has forced policymakers, legislators, judges, journalists, academics, and the public to give to children and their place in American society. Academic disciplines not normally connected to the study of children have developed specialized fields of inquiry (the history of children, the sociology of children, children's law) with specialized journals, professional associations, research institutes, and

conferences. Studies of the impact of divorce and foster care have proliferated, with specialized legal advocates prepared to lobby for and protect the rights of children in divorce or foster care. Across the country, states and local governments have adopted official statements attesting to the rights of children in state care. The American Bar Association has a special division focused on children's rights and many law schools have centers or institutes specializing in children's legal status and rights. The National Association of Counsel for Children, founded in 1977, now has over two thousand members in all states and provides training and resources to those serving the legal needs of children and youth.

From the 1965 Head Start initiative to the 2001 *No Child Left Behind Act*, children have had a place on the national policy agenda. In addition to the White House Conferences, major pieces of federal legislation have been passed in the last forty years in response to demands for greater attention to the situation of children in the United States. Following the 1962 publication of "The Battered Child Syndrome" by Dr. C. Henry Kempe in the *Journal of the American Medical Association*, efforts were launched to develop effective child abuse reporting laws. In 1974, Congress passed the federal Child Abuse Prevention and Treatment Act (CAPTA) that provided states with funding to investigate and prevent child abuse if they adopted mandatory reporting laws. CAPTA included provisions for confidentiality, the appointment of guardians *ad litem* for children, persons appointed by the court to protect the best interests of the child, and the creation of a National Center on Child Abuse and Neglect. In 1978, the *Adoption Reform Act* was passed. In 1984 CAPTA was broadened to include more types of maltreatment. In 1980 Congress passed the *Adoption Assistance and Child Welfare Act* to address problems in the foster care system. In 1981 block grants to states were intended to improve child protective services. Congress passed the *Child Abuse Victims Rights Act* in 1986 and the *Victims of Child Abuse Act of 1990*. The *Adoption and Safe Families Act of 1997* included provisions for legal representation, state funding for child welfare, and state performance requirements.

Despite this activity at the national level, the relationship of the United States to the United Nations Convention on the Rights of the Child (UNCRC) is a troubled one. Although most nations of the world signed

the UNCRC within the first two years, the United States did not sign it until 1995. More important, the United States has not ratified the UNCRC through the process of Senate confirmation, thereby remaining one of only two nations in the world to not ratify the UNCRC. Reasons for the failure of the United States to ratify the convention are complex but include the historical resistance to international treaties that might constrain national sovereignty, the deep tradition of states' rights in the areas covered by the convention (such as education), and the belief that ratification would make little difference to practices and policies. The latter explanation is related to the fact that even when nations ratify the UNCRC they are permitted to take up to twelve exemptions thereby undercutting some of the impact of the convention. Nonetheless, ratification would cement the priority given to children's issues at the federal and state level and would propel new discussion of policies such as minimum wage, education, and health care. For example, the UNCRC calls on nations to address the economic and social rights of children "to the maximum extent of their available resources." According to the Children's Rights Division of Human Rights Watch there are two key areas in which the United States falls far short of the standards articulated in the UNCRC: juvenile justice conditions, especially the detention of juveniles in adult facilities and laws permitting the execution of mature minors in a number of states, and the handling of children by the Immigration and Naturalization Service. The symbolic value of ratification is not insignificant especially in light of the actual conditions of children in the United States today.

A statistical overview of some measures of child well being in the United States confirms that children's needs and rights have not been fully met. One in six children live in poverty. Poor children are more likely to be unhealthy, score poorly on standardized tests, or drop out of school. African American children make up the largest number of children living in poverty. One in eight children in the United States have no health insurance. Less than one-third of fourth graders read at grade level. One in ten teenagers (ages 16–19) is a high school dropout. Despite the fact that there are nearly 40 million children between the ages of 5 and 14, the United States does not have a comprehensive plan for "nonschool programs" that cover the times of day and times of year when children are not in school. Rates of juvenile delinquency triple during the afterschool hours. Eight children a day die

from gunfire in the United States. Children in foster care, an ever-growing number, stay an average of 2.5 years, move to a new home four times a year, and have ten different caseworkers during their stay. The precise incidence of child maltreatment (abuse and neglect) nationally is difficult to ascertain but estimates suggest that there are one million substantiated cases of child abuse and neglect in the United States each year with at least twice that many number of reported cases. The number of children reported each year is about 44 per 1,000; the largest number of these reports come from educators. Exploitative child labor, while not a problem of the magnitude found in India or parts of Africa, exists in the United States as well. The majority of underage workers in the United States can be found working in agriculture, the second most dangerous occupation after mining. Estimates are unreliable but some point to as many as 800,000 child farm workers in the United States, working twelve or more hours per day for as little as \$2.00 per hour. Significantly, child labor in other sectors is strictly regulated. Finally, an estimated five thousand "unaccompanied minors" a year end up in the custody of the Immigration and Naturalization Service where they are frequently detained in juvenile corrections facilities rather than in child welfare or protection services.

Welfare reform in the United States, launched by the 1996 *Personal Responsibility and Work Opportunity Reconciliation Act*, transformed welfare programs into employment programs for the poor, especially single mothers, and eliminated the old Aid to Families with Dependent Children program. The initial results appeared promising but promotion of children's well being requires resources independent of moving mothers into jobs. For example, quality childcare and after-school programs not only help low-income working mothers but also improve children's opportunities to develop. Also, it is not yet clear that reducing dependence on welfare translates into a reduction in child poverty. In 1997, the Department of Education established a grant program to fund 21st Century Community Learning Centers, which provides substantial funding for school-based afterschool programs for children and community members. An ongoing effort to improve the situation of children across the United States in the specific area of education is the *No Child Left Behind* initiative launched in 2001. Its aim, to improve teaching and learning in all the nation's public schools by raising standards and making schools

accountable in meeting them, is heavily dependent on federal funding, which has been decreasing. At the state level, reconsideration of the death penalty for mature minors who commit capital crimes is taking place from New Hampshire to Florida to Texas. Still, other measures to get tough on juvenile crime continue to appear on ballot referenda and on legislative agendas, despite a sharp decline in youth violence. Recently, the United States agreed to an optional protocol of the UNCRC that prohibits the use of soldiers less than eighteen years of age in combat. Early in the twentieth century, the United States Children's Bureau held a prominent place in the advocacy for children's protection rights. At the start of the twenty-first century, there is no equivalent agency. This survey of government efforts aimed at children suggests a mixed picture when it comes to assessing the realization of children's rights in the United States.

Kathleen Alaimo

CURRENT DEVELOPMENTS IN THE RIGHTS OF THE CHILD

Today, the rights of the child is still likely to generate heated discussion among experts, politicians, parents, children, and the public at large. Nevertheless, the issue is increasingly regarded as a legitimate one, worthy of serious discussion rather than a novel, silly, or radical idea. The idea that children have rights as members of the human family and that these rights can be identified and ought to be respected has become a more widely accepted view in the twenty-first century. Debate continues over how to define the scope of children's rights and the means of implementing rights for a population group whose age extends from birth to eighteen years old. The United Nations Convention on the Rights of the Child (UNCRC) has contributed not only to the codification of children's rights but also to a global consensus about the legitimacy of that code. Even the United States, which has not formally ratified the UNCRC, conducts much of its legal, legislative, and policy business regarding children on the basis of the ideas and goals set forth in the convention. Today, the arena of children's rights is more active than ever before

and there are several distinctive features to these contemporary developments.

First, the efforts to implement the provisions of the UNCRC have resulted in the development of both international and national monitoring bodies whose work produces voluminous amounts of information about the real conditions of real children around the world. This information provides the basis for discussion and evaluation and goal setting among governmental authorities as well as in civil society. Articles 42 through 45 of the UNCRC establish institutions and processes to examine "the progress made by States Parties in achieving the realization of the obligations in the present Convention." An elected Committee on the Rights of the Child, composed of experts with "recognized competence" and supported by the United Nations, is charged with receiving and evaluating the reports of States Parties, conducting hearings about the reports, soliciting further information from other informed bodies, and making recommendations for future progress. In practice, this monitoring exercise has led to the expansion of organizations (governmental and non-governmental) devoted to monitoring, advocacy, or service in the name of children's rights. Indeed non-governmental organizations (NGOs) devoted to children's rights around the world number in the thousands. In the United States, every profession whose work touches on children has created associations to develop and monitor practices acknowledging and protecting children's rights. The result of all this monitoring and reporting on the international, national, and local levels by governments and civil organizations is to create a comprehensive body of knowledge and information about children, their living conditions, and the extent to which they are treated with respect. The very existence of this body of knowledge and information contributes awareness of the rights of the child.

Second is the effort to promote the "mainstreaming" of children's rights. Mainstreaming refers to the ways in which children's rights issues are incorporated into not only the work of child-focused bodies such as UNICEF or the International Catholic Child Bureau but also into the work of human rights groups, government agencies, research communities, business corporations, schools, judicial institutions, legislative bodies, and other entities. Mainstreaming children's rights means moving the

rights of the child into the center of policymaking, budget decisions, research investigations, community development projects, and legal decisions. Evidence that the mainstreaming of children's rights is moving forward can be found in many places. Human rights groups such as Amnesty International, Human Rights Watch, and the International Labour Organization have special offices devoted to children's rights issues. In the United States the Food Research and Action Center sponsors the Community Childhood Hunger Identification Project while the American Bar Association sponsors several offices that work on children's legal issues. When the United Nations Security Council approved three resolutions (nos. 1261, 1314, and 1379) regarding children and armed conflict it linked its primary concern with international security to the issue of children's rights. UN peacekeeping missions now routinely include child protection advisors. And the UN High Commission for Refugees now pays closer and more specific attention to children. The inclusion of specific provisions for the education of children and young people in programs to control and reduce HIV/AIDS is yet another example of mainstreaming children's rights to health and information. Even international corporations have felt pressure to consider the human rights implications of their business practices, especially regarding child labor violations. Civil society, through shareholders, the media, and NGOs, have brought the issue into boardrooms. In 2002, the UNCRC Committee on the Rights of the Child devoted its annual general discussion conference to the role of the private sector in implementing children's rights. A woman-owned carpet manufacturing company in Nepal recently launched a program known as RUGMARK International to bring together carpet makers, exporters, importers, and NGOs in an effort to end child labor exploitation in the carpet industry. Incorporating children's rights in sustainable development plans is another aspect of mainstreaming. Recently, adolescent girls in Bangladesh, normally secluded at home until marriage, worked with community leaders on a water and sanitation management plan. At the highest levels of government, efforts have been made to bring children's rights issues into the mainstream of decisionmaking. The most notable effort is Norway's Office of Ombudsman for Children, the model for such government positions. The role of this type of

government office is to coordinate, at the highest level, programs that serve children, to integrate children's needs and rights into all aspects of government work, and to collaborate with other levels of government as well as nongovernmental organizations in improving the quality of life for children. In 2002, human rights lawyer Cherie Booth (spouse of British Prime Minister Tony Blair) called for the creation of such a post in the United Kingdom, arguing that children's rights must move up the government's agenda (Booth 2002). According to Marta Santos Pais, director of UNICEF'S Innocenti Research Centre in Florence, Italy, mainstreaming children's rights requires moving children's issues from the margins to the center at all levels of decisionmaking: "Only by bridging the gap between a commitment to the rights of the child and its translation into tangible policies and practices will we be successful in moving the child rights agenda forward" (Pais 2002, 12).

Third is the increasingly visible and effective role of experts in the promotion of children's rights. Universities and research institutes have played a significant role in this development. College courses, degree programs, conferences and workshops, journals and working papers, sponsored research, and expert testimony are all ways in which academic experts have contributed to the discussion of children's rights in the United States and throughout the world. Children's studies, a relatively new interdisciplinary field, is following in the footsteps of women's studies programs by bringing the study of children into the center of academic life. In the United States, the American Psychological Association has established a Consortium on Children, Families, and the Law drawn from research centers around the country that offers an annual series of expert briefings for congressional staff. During the 1990s, the consortium sponsored dozens of briefings on topics related to child and family policy including foster care reform, legal requirements for parent and child involvement in special education planning, children and violence, international law and children, and issues in juvenile delinquency. Although the direct influence of these briefings on legislative outcomes is hard to measure, there seems little doubt that "knowledge creep" has resulted. The briefings attracted increasingly large audiences with more and more representatives of the senior congressional staffs. Scholars who presented

at the briefings have been cited in the reports of congressional committees and have served on advisory bodies for congressional committees.

Fourth, and perhaps most significant, is the development of participation rights. Indeed, if it is recognized that children's rights have a long history in terms of rights to care and protection, then what is really new for the twenty-first century is the growing emphasis on and realization of the participation rights of children and young people. The UNCRC not only calls for consideration of the child's best interest but also demands that children be given a voice—not only through adults but in fact a voice of their own. Article 12 states that children have the right to express their views freely in matters that affect them and that these views must be given due consideration. In addition, the UNCRC specifically calls for the inclusion of children's voices in "any judicial and administrative proceedings affecting the child." More broadly, Article 13 states a right to free expression and access to information and Article 15 states a right to association. All these articles are shaped by the notion of the evolving capacities of children based on age and maturity.

Two contemporary outcomes have resulted from the development of participation rights. One is the flowering of organizations run by and for children and young people, as well as the inclusion of children in adult-run organizations. The Internet has facilitated many of these efforts, but they can also be found in places where information technology is unknown. Countless examples demonstrate increasing visibility and audibility of children. At the 2002 UNGASS on Children hundreds of children participated and delivered a message entitled "A World Fit for Us" (UN General Assembly 2002a). In India, a working children's union called Bhima Sangha brings young child laborers together to demand better conditions

and wages and to fight against child marriages. In Peru, *municipios escolares* are children's councils based in public schools which have now become mandatory; they focus on children's rights issues and are recognized by local authorities such as the police and churches. The second outcome resulting from the growth of participation rights is the development of processes and structures to foster participation and shared decisionmaking not only in legal situations but also in all aspects of daily life. This latter phenomenon has the potential to revolutionize the decisionmaking process in schools, custody hearings, discipline proceedings, doctors offices, town planning meetings, recreational facilities, state homes, and families. It has the potential to lead to a more full realization of democracy as children learn how to participate in situations that involve making choices and weighing competing interests. The most significant aspect of the shared-decisionmaking model in fostering children's rights is that it does not emphasize conflict and antagonism, say between children's rights and parent's rights, but rather encourages collaboration and resolution. If the heart of children's rights is the idea that children are to be taken seriously, treated with respect, and recognized as possessing inherent human dignity, then the effort to promote the participation of children in ways in which adults and children collaborate can be a more effective means to realizing the rights of the child. Since participation does not necessarily mean self-determination, the model of shared decisionmaking accommodates the process of learning how to make decisions that in fact have consequences. The aim of the UNCRC's call for the child's right to participate is to prepare children to function as useful members of their societies, and to prepare them in a developmentally sound fashion.

Kathleen Alaimo

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MORAL EDUCATION

In one form or another, moral education has always been a part of American schooling. This chapter will present a brief history of moral education followed by an in-depth look at the major contemporary approaches to moral education: Values Clarification, Cognitive-Developmental Moral Education, and Character Education. First, however, it will address some definitional issues.

DEFINITION

There is no settled definition for the phrase moral education; it can mean a number of things. For example, it could mean studying morality from a philosophical standpoint. On the other hand, it could mean instruction aimed at shaping or influencing the moral thinking or behavior of students.

Moral education can also be direct or indirect, explicit or implicit. Explicit moral education refers to instruction that is openly and directly part of the curriculum. Implicit moral education is that presumed to occur as an unofficial consequence of how schools are organized, as a result of the rules and statuses that govern how persons are to behave in the institution.

Implicit moral education has been called the unstudied curriculum or the hidden curriculum. Robert Dreeben has examined the structure of schooling and speculates that it promotes a variety of normative outcomes appropriate for our society. As one example, unlike families, schooling teaches children to accept being treated as categories such as third graders and the like. Being treated as members of a category is necessary for a functional society. We cannot expect all of our relationships with others to be intimate. We must deal with a limited range of others' selves. We do not expect to have deep knowledge of an individual bank teller, for example. We expect them to behave toward us within a re-

stricted range of conduct as we, as customers, do with them. Dreeben's speculation is that the structure of schooling contributes, unofficially, to citizens learning appropriate ways to relate to one another (Dreeben 1968).

The presumed outcomes of the hidden curriculum are not necessarily positive. Grouping students according to their abilities is officially intended to make instruction more efficient. Slower learners do not hold brighter students back. In spite of this explicit intent, Reba Page's research, for example, shows negative psychological effects on students, especially those in the lower tracks (Page 1991).

This chapter will address only explicit or direct moral education. It defines moral education as a general category of instruction that encompasses a variety of approaches. What they have in common is that they all intend to influence the values of students. They directly engage students in examining values and how they should relate to behavior. All forms of direct moral education assume that young people will not automatically develop desirably; moral education is intended to get them to think and behave in ways deemed appropriate by the moral educators.

HISTORICAL BACKGROUND

In colonial times, moral education typically was associated with some form of Protestant religious education. The famed *New England Primer* wove religious concepts, prayers, and doctrine into grammar lessons (Ford 1962). In learning the alphabet, for example, students recited "A In Adam's Fall We sinned all," and "C Christ crucify'd For sinners dy'd."

The connection of religious education to moral education has persisted throughout United States history. At the advent of public schooling in the first half of the nineteenth century, religious instruction was part of the curriculum. The foremost proponent of public schools,

Horace Mann of Massachusetts, believed students should read the Protestant Bible in school.

In 1836, McGuffey's readers were first published (McGuffey 1989). These textbooks included moral instruction. Children were encouraged to be virtuous and reverent. These texts were hugely popular. Well over 120 million copies were sold.

To the extent that religion was involved in the public school curriculum, it was Protestant. Some form of Protestantism was the dominant religion in the early days of the United States. This changed when large numbers of immigrants, especially Irish, began to come to the United States. The Irish immigrants were Catholic. Catholic parents bristled when they discovered that their children were exposed to the Protestant Bible and other features of Protestantism in the schools. In some cities Catholics created their own private schools.

By the turn of the twentieth century, religious-based moral education was beginning to fade from public schools. Religious moral education did not disappear, but it was no longer as widely practiced in public schools. Massive immigration and increasing religious diversity in the public schools contributed to the rise of secular forms of moral education.

The major form of secular moral education in the early decades of the century was called character education. The general aim of character education was to get young people to hold specific values such as honesty, courteousness, patriotism, and other virtues often tied to notions of good citizenship rather than religiosity.

Character education was endorsed and advocated widely. For example, in 1905, a resolution of the National Education Association said that building character was the central aim of schooling. Scores of articles promoted character education and described schooling practices that presumably stimulated the development of good character. Among them were homerooms, extracurricular activities, and giving grades for citizenship.

Research on the effectiveness of character education was mixed. Some studies reported positive results, others not. Today the best known of these studies is that of Hugh Hartshorne, Mark May, and their associates. The Character Education Inquiry was a large-scale five-year study. The major finding of the study was that character education did not have a consistent effect on students' moral behavior. Be-

havior appeared to be influenced more by situational factors than students' presumed character.

Character education began to drop from prominence around the time of World War II. Some of its aforementioned practices continue to the present day. It is unlikely, however, that these activities are currently intended to promote good character as was their intent when instituted.

In the latter half of the twentieth century, three forms of explicit moral education emerged. The first was Values Clarification, followed by Cognitive-Developmental Moral Education, and most recently, new approaches to Character Education.

Alan Lockwood

VALUES CLARIFICATION

In 1966, Louis Raths, Merrill Harmin, and Sidney Simon published *Values and Teaching*. This book set out the theory and practice of the approach to moral education they called Values Clarification. The book proved to be highly influential and Values Clarification came to be a widely employed form of moral education in United States public schools.

Values Clarification contends that contemporary young people are confused about values. The authors believe that institutions such as the family, religion, and the state no longer influence people's values development as they presumably did in some distant past. Young people get conflicting messages about what is right and worthwhile from the media, their peers, and other sources.

According to the founders of Values Clarification, values confusion leads to undesirable outcomes. Among these outcomes are apathy, flightiness, inconsistency, extreme uncertainty, overconformity, and overdissentation. To address these problems, students must be clear about what they truly value. The methods of Values Clarification are designed to help young people determine what is important and worthwhile to them.

The methods of Values Clarification stem from a particular definition of value. For something to be a value it must meet seven criteria. It must be chosen freely; chosen from alternatives; the consequences of each alternative must be assessed; it must be prized;

it must be publicly affirmed; it must guide behavior; and, it must repeatedly guide behavior.

All seven criteria must be met for something to reach the status of a value. Values Clarification does not tell students what to value. It teaches them a process through which they can determine for themselves what they value.

In numerous publications, Values Clarification provides hundreds of classroom activities called strategies. One strategy is entitled *Twenty Things You Love To Do*. Students make a list of twenty things they love to do. Then each item is coded in a number of ways. For example, a dollar sign is placed next to those that cost more than an identified amount of money; an A next to those one prefers to do alone; a P next to those one prefers to do with people; an N5 next to those that would not have been on the list five years ago. Students then rank the items in preference order from one to five and indicate when each action was last taken. Students may then discuss their items and why they enjoy doing them.

The teacher employing Values Clarification is to exhibit certain characteristics. First, the teacher must be nonjudgmental. The teacher is to be nurturing, accepting, encouraging, and not critical of the values and value judgments expressed by students. The teacher also teaches the students to behave in this way to one another.

Although popular among many, Values Clarification faced a number of criticisms. Two of the prominent criticisms were that it could promote ethical relativism and that many of the strategies could jeopardize the privacy rights of students and parents.

Ethical relativism is the doctrine that contends that moral judgments cannot be proven to be right or wrong or better or worse. Consequently, all moral judgments are equal.

There are a number of reasons that some scholars claimed that Values Clarification embodied ethical relativism. Some of the strategies mix trivial value choices (favorite TV shows) with profound moral value choices (one's position on capital punishment). The seven criteria of value and the process for valuing do not ask students to defend their positions beyond their personal preferences; personal preferences are fine for trivial value decisions but moral judgments require a more thoughtful and elaborate defense. There has also

been concern about the emphasis placed on not making judgments of others' views, which can lead to the impression that all opinions are equally valid in matters of morality.

A serious concern about the use of Values Clarification's strategies and advice to teachers is the potential for the violation of students' and parents' rights to privacy. For example, students may be asked to complete sentence stems such as: *Secretly I wish . . .*, *My parents are usually . . .*, and, *When I'm at home alone I . . .* Another strategy asks students to draw a big cartoon outline of their house and add stick figures of the people who live in the house. They then are asked to write in cartoon balloons what the people are saying to one another. Teachers are encouraged to promote students' self-disclosures.

The threat to students' and parents' rights to privacy exists because these strategies are used in school settings. Students are required by law to be in school. Teachers have substantial authority over students. The disclosures required by the strategies are done in front of other students. These conditions make it likely that students will feel compelled to participate in the activities, even if they involve public disclosure of private information.

Alan Lockwood

COGNITIVE-DEVELOPMENTAL MORAL EDUCATION

The second major form of moral education to emerge in the latter half of the twentieth century was Cognitive-Developmental. It was based on the research on moral reasoning of Lawrence Kohlberg (Kohlberg 1981). Kohlberg's research extended that of Swiss psychologist Jean Piaget. Piaget had shown that adult moral thinking differed significantly from that of children. He called these stages of moral development (Piaget 1965).

Piaget had identified two stages of moral development. Kohlberg's research initially identified six stages. Kohlberg engaged in an extensive longitudinal study of approximately fifty boys, following them from childhood to early adulthood.

Periodically he would interview his subjects, ask-

ing them questions related to what he called moral dilemmas. A moral dilemma is a story, true or fictional, in which basic moral values come into conflict and difficult decisions have to be made.

One of his moral dilemmas is called the Heinz dilemma. In this dilemma the values of life and property come into conflict. The Heinz dilemma tells the story of a man whose wife is dying of cancer. The druggist in town has a drug that may cure his wife but he is charging much more for the drug than Heinz can afford. Heinz tries to persuade the druggist to charge less and he also tries to raise money from friends. Neither of these efforts works. Heinz decides to break into the store and steal the drug. A number of questions about this story are then asked of the subjects. One is: Was Heinz right in stealing the drug? Why or why not?

Kohlberg was not interested in whether his subjects thought a particular action morally right or wrong. Instead he sought to know how the subject came to his conclusions, that is, what was the nature of the reasoning about right and wrong that the subject brought to the dilemma.

Over the course of his initial study, Kohlberg found that his subjects' reasoning changed over time, passing through six stages of moral thinking. Briefly, (much more detail can be found in Kohlberg's writings), the stages were as follows:

Stage One: The Punishment and Obedience Orientation. Judgments of right and wrong are based on the physical consequences of an action, deference to powerful authority, and avoidance of punishment.

Stage Two: The Instrumental Orientation. Judgments of right and wrong are largely based on a determination of what satisfies the actor's needs.

Stage Three: Interpersonal Conformity. Judgments of rightness are based on that which pleases others and is approved by them.

Stage Four: The Law and Order Orientation. Judgments of rightness based on fixed rules and maintenance of social order.

Stage Five: The Social Contract Orientation. Judgments of rightness based on notions of human rights and standards agreed upon by due process.

Stage Six: The Universal Principles Orientation. Judgments of rightness based on general principles of justice that should hold in all situations.

Each stage captures a consistent moral point of view. The stages have certain properties and characteristics. Development occurs in an invariant sequence. That is, there is no skipping of a stage. A person reasoning predominantly at stage four has moved through stages one, two, and three in that order. Subsequent research found the same stage development in females as well as males, and across cultures.

Progression to the highest stage is not inevitable. Very few people attain the highest stages. Further research found that the majority of adults reason at predominantly stages three and four.

Another property of the stages concerns preference and rejection. Researchers discovered that, when presented with a range of reasoning, subjects preferred reasoning at a stage above their predominate stage of reasoning and rejected reasoning at stages below their predominate stage.

When asked to paraphrase the other reasoning, subjects had difficulty doing so with the higher stage reasoning but were very accurate with the lower stage reasoning. Therefore, while subjects preferred the higher stage reasoning, they had difficulty comprehending it. Kohlberg suggested that people have an intuitive preference for higher stage reasoning.

From a philosophical point of view, Kohlberg argued that the highest stages are morally better than lower stages. The superiority of the highest stages is not simply because they emerge later. Rather, their superiority is argued for on the grounds of ethical theory. Among other things, the highest stages produce more consistent judgments that defend and protect human rights.

Some researchers wondered if stage progression could be advanced through educational intervention. That is, could progression be speeded up? Moshe Blatt and Lawrence Kohlberg tested this proposition (1975). Students in the treatment group participated in guided group discussions about various moral dilemmas. The control group received regular instruction. At the conclusion of the experiment, those students who discussed dilemmas advanced in their stage of moral reasoning more than those who had received regular instruction. The

advantage for the treatment group averaged about half a stage.

The belief that the highest stages of moral reasoning were superior to the lower stages, coupled with evidence that stage development could be influenced by instruction, became the basis for Cognitive-Developmental Moral Education.

Practical applications of Cognitive-Developmental Moral Education followed this seminal research. Curricula were developed which involved students in the discussion of moral dilemmas. For example, Alan L. Lockwood and David E. Harris (1985) created factual historical dilemmas for use in secondary U.S. History courses.

Later, Kohlberg became involved in what became known as Just Community Schools. These schools were democratically organized and students had substantial power to make decisions on how the school should be governed. Their discussion of what rules should be created and how they should be enforced engaged them in real life moral issues (Power, Higgins, and Kohlberg 1989).

THE FUTURE OF MORAL EDUCATION

It is, of course, difficult to predict the future of moral education. As noted at the outset, some form of moral education has always been a part of public schooling. Given that, it is likely that some form of moral education will be part of schooling in the new century. What form or forms it will take is unknowable at this time.

There is reason to believe that moral education, in whatever form, will be conducted predominately at the elementary school level. Elementary teachers often see part of their role as helping children learn to behave properly. For some this is as important as the teaching of reading, mathematics, and other subjects. High school teachers, on the other hand, are less likely to view moral instruction as part of their mission. High school teachers are educated, for the most part, in the subjects they teach. Their training, certification, and mandate from their schools do not explicitly involve moral education. Unless this changes, moral education is unlikely to become an integral part of higher-level public schooling.

Alan Lockwood

CHARACTER EDUCATION

Character education is an enterprise that defies precise definition. This entry will trace the development of character education, focusing primarily on the twentieth century, and develop a conception based on common themes apparent in the historical record. There have been two periods in the twentieth century in which character education has been significantly emphasized in schools. The first of these periods, from the turn of the century until about 1940, will be referred to as the early character education movement. The second period, from approximately 1980 until the present, will be referred to as the recent character education movement.

HISTORICAL ROOTS

Although character education is largely a twentieth-century American phenomenon, its roots go back as far as the seventeenth-century European Enlightenment. Prior to the Enlightenment it was widely understood that morals were to be taught by the church. The intellectual revolution of the Enlightenment resulted in the secular gradually replacing the supernatural in the general worldview. This secularization also changed the basis for morality and moral education. The post-Enlightenment worldview accepted the perspective that the universe and human life can be understood through the use of reason alone, and humans can be improved through secular education. When the eighteenth- and nineteenth-century shifts in power from the church and the monarchy to democratic republics transpired, the maintenance of social cohesion required that a new basis for morality, as well as a new means of teaching it, had to be found.

In Europe, two countries in particular, England and France, preceded America in the effort to develop a secular approach to moral education. In England, the Moral Instruction League, formed in 1897, was made up of many of the leading educational thinkers and philosophers. The league's views on secular moral education to strengthen the character of youth were incorporated into the Education Codes of 1904 and 1905. In France, where educators wanted to free themselves not only from the old regime, but also the church, explicit programs in secular ethical instruction in the schools of the Third Republic were

referred to as *morale laïque* (Stock-Morton 1988). Prior to the creation of the Third Republic in 1870, moral instruction had largely been religious in nature. The American effort to find a secular basis for moral education followed European efforts and took on a uniquely American character.

THE EARLY CHARACTER EDUCATION MOVEMENT IN AMERICA

This evolution from a religion-based moral education to a secular moral education, so important to the emerging democratic nation states, shaped the rise of the early character education movement in America. In the late eighteenth century Thomas Jefferson argued for the need for a public education system that infused virtue into the masses. He realized that with no state church and no monarchy, a virtuous American government would have to be based on a virtuous people. Many of the leaders of this generation—George Washington, Benjamin Rush, Benjamin Franklin, and Noah Webster—also saw the need for education to unify an increasingly ethnically and socially diverse population. Homogeneity was an explicit goal for education in this era. Thomas Jefferson, for example, in an 1875 letter to John Bannister, argued for an educational system that would produce men whose “manners, morals, and habits are perfectly homogeneous with those of the country.” Horace Mann, the father of the Common School Movement, also believed a strong moral emphasis was necessary to produce a stable and strong democracy.

Benjamin Franklin noted the need for a “Public Religion.” Franklin believed that man could be morally perfected and that a reliance on traditional religion was insufficient. His attempt to achieve general moral perfection foreshadowed one aspect of later approaches to character education by enumerating a list of virtues. The search for a secular morality, and a means of delivering it outside of the context of religious education, accelerated and became a central focus of American educators at the turn of the twentieth century. Due to dramatic increases in urbanization, industrialization, immigration, and shifting cultural values in America in the thirty years following the Civil War, a prevailing national unease resulted in a heightened concern about social instability and the character of youth.

The United States was a more heterogeneous and more religious country than European nations at the turn of the twentieth century. As a result, the secularization of moral education in the United States took on a distinctive character. It was religious heterogeneity more than a desire to put forth a secular moral education that forced American educators to separate religion from education. This separation was not something that occurred easily or quickly. For example, even though forty-one out of forty-six states had effectively legislated sectarian influences out of public schools by the turn of the twentieth century, nearly all of the early character educators in America were active members of the Religious Education Association (REA) and frequent contributors to the REA journal, *Religious Education*.

A significant benchmark for the origin of the early character education movement was a resolution adopted at the 1905 annual meeting of the National Education Association where the NEA recorded its approval “of the increasing appreciation among educators of the fact that the building of character is the real aim of the schools and the ultimate reason for the expenditure of millions for their maintenance.” This statement was widely cited by the educational establishment as legitimating character education in schools. It was in the twenties that character education gradually began to replace moral education as the preferred name for the movement. For example, Milton Fairchild, one of the more influential founders of the character education movement, in 1922 renamed his National Institution for Moral Instruction (founded in 1911), the Character Education Institution.

This shift in nomenclature occurred in part to separate the movement from its past of religious-based moral instruction. This separation, however, was never fully completed in this era. For example, in 1925 the Moral Code for Youth, a classroom poster widely disseminated by *Colliers Magazine*, listed as its last principle “Faith and Responsibility” and included the following injunction: “I must do all these things because I am accountable to God and humanity for how I live . . .” Even though educators in the 1920s and 1930s knew that they could not teach a religion-based character education in schools, a more complete break with religion as a basis for character education was slow in coming and was not apparent until after World War II.

THE PEDAGOGY DEBATE

The debate over the methods to be used to foster character in American schools remained focused on two approaches throughout the first half of the twentieth century. At the turn of the century the dominant pedagogy in America's schools involved recitation, memorization, and drill. At the same time, the influence of Rousseau, Herbart, Pestalozzi, Froebel, and Dewey caused many educators to reject more direct and traditional approaches and give greater attention to the interests and needs of the child. Education was becoming more child-centered and activity based. These two approaches (direct and indirect/teacher-centered and student-centered) have provided the language and defined the framework for discussions of how to teach character in America's schools for the entire length of the twentieth century.

Generally, direct methods accord a more central role to teachers and their individual determination of the content of the lesson, teacher planning of the lesson, and the incorporation of the lessons into the formal curriculum (e.g., history, literature, civics, etc.). Indirect methods tend to be more incidental and arise as the occasion dictates. Indirect lessons are based on student experiences, and preaching and moralizing on the part of the teacher are to be avoided. Students are asked to find the moral lesson for themselves, and to form their own plans and solve their own problems. Many reformers saw the direct approach as old and traditional, and the child-centered approaches as new and innovative. Surveys of the practice of character education in schools conducted in the 1920s and 1930s reveal that most schools used a blended approach with a slight preference favoring direct approaches.

THE RECENT CHARACTER EDUCATION MOVEMENT

In the period between America's entry into World War II and the mid 1970s, the phrase *character education* was seldom used to describe any activity of schools. Educational historians have offered a number of interpretations regarding the reasons for the decline of character education. Edward McClellan (1999) suggests that character education in this period declined due to an increasing emphasis on the cognitive dimensions of education and a focus on

anti-communism. These trends directed educators' attention away from character education initiatives. Sherry Field (1996) argues that character education became subsumed into social studies education as America became more concerned about patriotism and citizenship in the unsettled times of the forties and the ensuing Cold War era. James Arthur (2003) suggests that character training had become associated with the youth programs of totalitarian regimes in Europe in this era and as a result fell into disfavor. The post-World War II national preoccupation with winning the Cold War effectively pushed character education to the background.

Accompanying the turbulent Cultural Revolution of the 1960s and 1970s, two approaches to moral/values education achieved prominence. In 1966 the book *Values and Teaching* by Louis Rath, Merrill Harmin and Sidney Simon *appeared* advocating Values Clarification. Also in 1966, Lawrence Kohlberg presented the implications of the cognitive developmental approach to moral reasoning for moral education for the first time in an article in the journal *School Review*. Both of these approaches represented a sharp break from the direct (teacher-centered) approach to character education, and both took a negative view of the traditional "bag of virtues" approach that enumerated a list of virtues to be inculcated in children by teachers. Instead, both of these approaches argued that it is each individual's responsibility to decide what their values should be. In both approaches indoctrination and tradition is seen as anathema. Parents or community as a source for the development of personal values is to be avoided, and teachers and schools were to serve as facilitators only in this moral/values education process. Both approaches were attuned to the individualistic and anti-authoritarian tenor of the times.

These two approaches met different fates. The Values Clarification approach, although achieving wide use in schools, after incisive critiques by Alan Lockwood was unable to shake the charge of moral relativism and fell into disfavor (see Lockwood 1975, 1977). The cognitive development approach of Lawrence Kohlberg never did achieve a strong foothold in schools due to the difficulty many teachers had with understanding and mastering the teaching skills entailed.

In the late 1970s and 1980s character education emerged again. The national reaction against the

perceived excesses of the Cultural Revolution of the 1960s, apparent in a newfound permissive morality and selfishness, was accompanied by a renewed concern for the well being of youth. The more conservative mood of the nation was embodied in the election of President Ronald Reagan in 1980. The emerging consensus was that something needed to be done about the increasing social instability and the declining well being of youth. These concerns received national legitimacy in the 1987 Conference on Moral and Character Education, organized by William Bennett, then-Secretary of Education. Gradually, once again, character education became the preferred phrase to describe the school's response to the nation's concern about youth conduct. The phrase *character education*, as in the early decades of the twentieth century was once again used to separate the new movement from the earlier moral and values approaches.

At the turn of the twenty-first century the debate over the proper methods to use in character education continues. Ed Wynne, an influential early proponent of the current character education movement defined character education as the transmission of moral values to succeeding generations (Wynne 1985/1986). From Wynne's perspective, moral values are the vital common beliefs that shape human relations in each culture. Ed Wynne, and his associate Jack Benninga (Benninga and Wynne 1988), take a decidedly behavioral and even indoctrinative view on the pedagogy of character education. They propose that teachers (1) identify virtue, (2) establish virtues as goals for students, (3) provide opportunity for students to practice virtues, (4) praise students when behavior is displayed, (5) identify undesirable traits and prohibit them, and (6) use schools' formal curriculum and ceremonies to support such activities. They also emphasize the importance of hiring, training, and retraining staff who support pro-character policies. Wynne argues that on the whole, school is, and must be, inherently indoctrinative. The only significant question for Ed Wynne was: Will the indoctrination be overt or covert, and what will be indoctrinated? (Wynne 1985/1986)

Many, however, who share the concern of character educators about the well being of youth, take a different view on pedagogy. Three influential leaders of the current character education movement, in a 2001 editorial in the national education weekly

Education Week, criticize four varieties of contemporary teacher-centered character education programs (Schapps, Schaffer, and McDonnell 2001). They characterize these four approaches as cheerleading, praise and reward, define and drill, and forced formality. These three leaders argue that these teacher-centered and direct approaches will not yield deep and enduring effects on character. Instead they argue that the approach must be child-centered, focused on the needs of children and tied to the development of caring and just communities in schools.

Alfie Kohn, a leading critic of the teacher-centered traditional form of character education argues that instead of using teacher-centered approaches (such as "compel and tell") that children must be invited to, approaches should be used that allow them to reflect on complex issues, interpret those issues in light of their own experiences and questions, figure out for themselves what kind of persons they want to be and which traditions are worth keeping, and to decide how to proceed when two basic values are in conflict (Kohn 1997). Kohn's views echo those of proponents of the values clarification and cognitive developmental approaches of the 1970s. From this perspective moral education is synonymous with decisionmaking.

Thomas Lickona (1991, 2004), an influential leader in the current character education movement, best captures its spirit and practice. He defines character education as the intentional proactive effort to develop good character. From Lickona's perspective the qualities of good character consist of virtues. Virtues, in turn, are objectively good human qualities. According to Lickona, the virtues provide the moral content that defines moral character and moral character is the disposition to behave in a morally good way. Lickona advocates what he calls a comprehensive approach to character education, using direct and indirect methods, that seeks to develop full moral character—its cognitive, emotional, and behavioral aspects—and to do so through the total moral life of the school.

Lickona's perspective, as well as that of many other proponents of character education, has its roots in the ancient Greeks. For the Greeks the purpose of life was to achieve the good life and the qualities that made a life excellent were referred to as virtues. Aristotle emphasized habituation and Plato reason in the achievement of the virtues, but they both be-

lieved that ethical behavior could be taught and that virtues were in fact dispositions to do good. Virtues could also be referred to as traits. The good person was therefore the virtuous person.

COMMON THEMES

In the United States, character education has been rooted in two persisting conditions. First, it has been rooted in the need to fulfill one of the essential requirements of a representative democracy—the development of moral and civic virtue in the citizenry. The second condition is found in the need to unify a diverse population by instilling a common set of values.

The call for character education in the twentieth century, however, goes beyond the conditions described above and its rationale can also be found in concerns about social instability and the values and well being of youth. For example, in 1935, Harry McKown, author of *Character Education*, a widely read book on character education, listed five sources underlying the need for character education: breakup of the home, rampant individualism, political corruption, propaganda (biased values in media), and crime. In 1991, Tom Lickona, in his seminal work *Educating for Character*, listed four sources of the need for character education: youth violence, troubled families, images in the mass media, and greed and materialism. The only source presented by McKown and not found in Lickona is political corruption, and it is worth noting that Lickona's book was written before the political scandals of the 1990s occurred.

The phrase *character education* has been used at the beginning of periods of interest to separate the new movement from prior practice. In the early movement the phrase *character education* was used to separate it from religiously based moral education, and in the later movement to separate character education from the moral/values educational approaches of the 1970s and 1980s.

The focus of character education has traditionally been on virtues or traits of character. Although the lists differ, nearly all approaches to character education contain lists of virtues. Character Counts, for example, a leading character education organization, lists six pillars of character: trustworthiness, responsibility, respect, fairness, caring, and citizenship. Controversy about the methods to be used to teach character has paralleled the broader educational debate over child-centered and teacher-centered approaches. Today, however, the term *character education* is widely accepted by both the proponents of child-centered approaches as well as the more traditional teacher-centered approaches. Early in the development of the recent character education movement many educators were uncomfortable with the phrase *character education*, sensing that it was too indoctrinative. Today, the phrase is more widely accepted and is seen as consistent with child-centered approaches.

In American schools at the turn of the twenty-first century character education, however defined, is part of the experience of schooling. While academics and advocates debate over the proper pedagogical approach schools should use, the most common pedagogy involves a blend of teacher-centered and student-centered approaches. In Larry Cuban's history of pedagogy in the America's classrooms in the twentieth century, he found that teacher-centered instruction dominated over the course of the century with a hybrid teacher/child centered approach making some inroads, primarily at the elementary level (1984). Given the wide diversity of school-based approaches to the development of youth character today, a precise definition of the phrase *character education* remains elusive other than to signal a concern about the character of our nation and especially our children.

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STUDENTS AT RISK

The national high-stakes testing movement that has affected education reform in virtually every state in the country is rooted in efforts to understand and better educate at-risk students. Such students were perceived to have the deck stacked against them in terms of educational and social support at home, enriching activities available to them in their communities, and perhaps innate intellectual endowments that they could bring to the challenges of academic learning. What began as an individual testing movement to target the learning difficulties of particular students has emerged into a systemic movement targeting the teaching deficiencies of entire school systems. In fact, many critics of the American education scene argue that the entire nation is at risk for under-educating its student body.

This shifting of the locus of risk from the individual to the larger system to the entire society captures the slippery nature of the very concept “at risk.” What does the term actually mean, and how is it applied to individual students and their educational systems? While other authors in this volume address the systemic and societal factors that enhance and potentially compromise the education of American students in general, this chapter presents the state of current knowledge on what it means for individual students to be at risk for negative educational, social, and psychological difficulties. It also addresses how students overcome or cope with their risk statuses, and how schools and communities can work to support the healthy development of students at risk for negative outcomes.

To be deemed a student at risk is to be identified as possessing a high likelihood of experiencing exceptional difficulties, either academically, socially, or psychologically. Note that the term does not imply the manifestation of such predicted difficulties in the moment. Epidemiological studies have repeatedly shown that students born to particular circumstances or experienc-

ing particular early life struggles are at greater risk of experiencing a range of difficulties at some point in the future. Technically, then, risk represents a likelihood estimate. What is the estimated likelihood that children of specific circumstances will manifest later problem behavior? Scientific attempts to answer this question have led to the careful identification of risk factors and the complementary study of prevention science. Researchers have pursued the possibility that the capacity to clearly identify the factors that place students at risk for negative outcomes can also inform preventive efforts toward reducing the likelihood that such outcomes will ever materialize.

As studies of risk and prevention have matured, it has become progressively clearer that single risk factors have relatively little utility in predicting negative outcomes. Rather, it is the combination and interactions among risk factors that have proven most lethal to educational and larger developmental success. Understanding how these factors coalesce and how prevention efforts can counteract them has become the focus of contemporary research in this area. As researchers have come to better understand the situation-specific nature of risk, and the pathways by which high-risk outcomes develop, they have also come to identify approaches to healthy adaptation in the face of risky conditions, and the roles schools and communities can play in promoting such adaptation.

This chapter includes six entries that describe different components of risk and responses to it in the lives of children and adolescents. The first entry presents the state of current knowledge on risk factors. It addresses single risks that have been found to be most powerful in contributing to high-risk pathways. The role of poverty is particularly highlighted, as it has been found to interact with a host of other risk factors in a variety of ways that threaten the well being of students across levels of education. This entry emphasizes both individual-level (those residing within the person) and

environmental-level risk factors (threats posed externally or by the environment). Most importantly it describes how individual and environmental factors interact to create particularly high-risk conditions.

The second entry introduces the concept of resilience, the means by which students respond to or cope with risk in constructive ways. Just as risk is not an individual trait, but rather a condition spawned by an interaction of individual and environmental factors, resilience too describes a condition or process of responding to the world. Although it is fashionable to discuss the characteristics of resilient children, it is more accurate to consider resilient processes to coping with extreme stress. In this presentation, the concept of resilient mechanisms is presented to emphasize the dynamic nature of resilience. These mechanisms reflect the intersection of personal strengths with environmental supports. It is through such intersections that resilience is forged.

The third entry addresses prevention approaches. These approaches are designed to target risk factors and high-risk processes in part by attempting to promote the development of resilience. The entry begins with a description of the nature of prevention, including the conceptualizing of it in response to different levels of risk statuses among students. The latter part of the entry focuses on types of prevention programming. Youth mentoring and afterschool programs are particularly highlighted because of their current prevalence in school and community settings.

The fourth entry shifts from the prevention of negative outcomes to the promotion of healthy development. The entry includes an overview of the positive psychology movement, which claims that an excessive amount of intellectual energy and financial resources have been invested in the study of pathology, at the cost of under-studying how to support the healthy development of all children, including those at risk for negative outcomes. Within this context, Search Institute's developmental assets framework is presented, including an overview of the forty assets found to be most instrumental to healthy development. The entry concludes with a review of how communities across the country are attempting to put the developmental assets framework into practice.

The fifth and sixth entries focus on immigrant youth and racial and ethnic identity development, respectively. These entries were included because of the unique risks immigrant students face, along with

the unique opportunities they possess for building important strengths to cope with such risks. Given that the external support structure for immigrant students shifts dramatically through the process of migration, such students face particular challenges in accessing the external assets or resources needed for healthy development. Within the larger immigrant population of students there are critical differences with respect to racial background, parent occupations, and documentation status (documented versus undocumented). The nature of such differences has a major influence on the extent to which students will experience high-risk situations in their new country and new school placements.

The racial and ethnic identity entry builds upon the immigration entry, given the strong relationship between immigrant students' country of origin and their ethnic identity. But racial and ethnic identity development are much broader terms that apply to all students. These concepts tend to be more salient to students of color and ethnic minority groups, however, due to the encounters such students face in American society. Within the larger concept of adolescent identity development, racial and ethnic identity can be particularly important for students who are identified as being outside the cultural mainstream. We conclude this entry and the chapter with a summary of educational methods used to promote healthy racial and ethnic identity development in schools as a means of building resilience.

The overarching goal of the chapter is to present a range of research addressing students at risk, including approaches to promoting their healthy development. Although a wide range of research findings exist, the study of risk, resilience, prevention, and health promotion is very much evolving. This chapter presents the current state of our knowledge base, but the great likelihood is that it will be outdated shortly. As new breakthroughs emerge in the understanding of risk and resilience, prevention programs become more thoroughly informed. It is this iterative interaction of risk and resilience research with preventive and developmental practice that makes the study of students at risk particularly interesting, and holds open the possibility for finding approaches that can enhance the educational opportunities for those students facing the most serious developmental challenges.

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RISK FACTORS

Risk factors are the phenomena that contribute to or predict negative outcomes over the course of one's life. These phenomena can be internal characteristics of the person, such as psychological dispositions or emotional vulnerabilities. They can be external factors, such as environmental hazards or the lack of adequate environmental supports. The phenomena can be experienced as behavioral patterns, including repetitive self-destructive acts like excessive drinking or habitual careless driving. Finally, they can be biologically based, as in the case of brain damage and predispositions toward certain forms of depression.

By definition, risk factors do not, in and of themselves, equate to negative functioning. As the terms suggests, they place one at varying degrees of risk for negative outcomes. To be "at risk," from this perspective, is to be identified as exhibiting some degree and combination of the risk factors presented in this entry. But all students exhibit or experience risk factors in their lives to a certain extent, yet most would not be considered at risk. Although there is no formally agreed-upon definition of at risk, the term generally implies that the likelihood of experiencing negative outcomes, such as school dropout or a debilitating illness, is higher among those students exposed to or experiencing a combination of clearly identifiable risk factors.

THE PARTICULAR RISK OF POVERTY

Poverty consistently has been found to correlate with a wide range of negative outcomes, including health problems and educational difficulties. The pediatric researcher Steven Parker (1988) uses the concept of "double jeopardy" to capture the compounded effects of poverty on developmental outcomes. He has shown how poor children are highly exposed to certain risk factors, such as medical problems stemming from inadequate health care, family stress linked with unemployment, and parental depression resulting from the strains of daily economic survival. As a result of having inadequate resources, poor children have a harder time coping with many of the risk factors to which they are exposed. This dual problem of excessive exposure to

risky conditions and inadequate resources for coping with them contributes to what the researcher Paul Smokowski (1998) calls a "risk chain." As an example of this chain, poverty often links with parental unemployment or low wages, which in turn commonly links with parental stress and depression, which can link with child maltreatment, which is often followed by declines in school performance and related developmental difficulties.

So although poverty does not fatalistically determine negative outcomes, it is frequently a critical link within a risk chain. Even for powerful risk factors like poverty, however, specific processes must be enacted in order for such factors to culminate in the negative consequences they predict. The developmental psychologists Arnold Sameroff and Michael Chandler (1975) articulated a transactional model of risk to explain varying outcomes for children and youth exhibiting common risk factors. As a response to the predominance of linear main-effect models, which suggest that a single risk factor, such as poverty, can result in negative outcomes, Sameroff and Chandler showed that such factors interact with other variables to more accurately account for developmental and health-related prognoses. Specifically, the transactional model shows how inner strengths (such as hopefulness, intelligence, and social adjustment) and vulnerabilities (hopelessness, low intelligence, and poor social adjustment) interact with poverty and other environmental risk factors to produce varying outcomes. Among children and youth with a preponderance of inner strengths versus those with a preponderance of inner vulnerabilities, developmental and health-related outcomes are more likely to be positive. It is research of this sort that originally led to the concept of resilience: positive coping in the face of high-risk conditions.

The transactional model shows how internal and environmental factors interact with each other to create outcomes. In relation to this model many researchers, including Sameroff and his colleagues (Sameroff and Chandler 1975; Sameroff and Seifer 1983), and the cross-cultural developmental psychologist Emmy E. Werner (1993), have shown the cumulative effects of risk. Somewhat similar to the risk chain noted above, the impact of risk factors is compounded when they are combined with each other. In general, the greater the accumulation of risk factors, the higher is the likelihood of subse-

quent negative outcomes. Within the transactional and cumulative models, certain factors have been studied particularly well. These include such social risk factors as maternal health problems, maternal anxiety, impaired mother-child interactions, low maternal education, negative parental attitudes and values, unemployment, minority group status, inadequate social support, large family size, and stressful life events. Researchers consistently have found each of these individual factors to be predictive of negative outcomes for children and youth, including negative school outcomes. As they have shown, however, it is the cumulative effect of these risk factors that is particularly devastating. The more they cluster together, the greater the likelihood that negative outcomes will follow.

In the examination of risk clusters, poverty repeatedly emerges as an organizing factor. Increased health risks associated with poverty include malnutrition and difficulties stemming from it, such as a weakened immune system and the consequent increase in infectious diseases. The clustering of risks associated with poverty begins early in life, with low birth weights three times higher among poor families. But many children of poverty grow up to be healthy and well adjusted. In the sections that follow, core individual and environmental factors that link with poverty to create a heightened risk status are presented.

INTERNAL OR INDIVIDUAL RISK FACTORS

Three psychological factors have been particularly well studied with interaction models such as the one articulated by Sameroff and Chandler: intelligence, temperament, and attachment. Researchers often refer to intelligence as genetic endowment to emphasize the innate or native contribution to cognitive functioning. Although it is clear that intelligence, as measured by most standardized assessments, is highly susceptible to environmental stimulation, including high-quality education, it also is clear that there is an innate, genetic component to intelligence. For example, students with severe neurological or chemical brain abnormalities are limited with respect to environmental responsiveness, and have been shown to be at risk for school difficulties and other negative repercussions. From the perspective of genetic endowment, then, intelligence-related risk is largely

a function of being limited in one's capacity to utilize environmental supports in response to the daily challenges of living. Within the school context, students who are severely limited in genetically based intellectual functioning will be less capable than their peers of learning from the school curriculum and educational support structure.

Beyond the obvious risks posed by inherited cognitive limitations, low intellectual functioning also has been shown to be an important risk factor. Precisely because intelligence is so susceptible to environmental influences, young children from understimulating home environments often come to school unprepared to learn. While the majority of these children have the genetic endowment required to succeed in school, their pre-formal education years have underprepared them for the demands of early formal education. Because such children are ill equipped to take advantage of the intellectual enrichments available in school, the assessment of their intellectual capacities tends to be negative. As a result, children who begin school behind their peers intellectually tend to fall further behind over time. As this occurs, another risk chain often ensues: early low intellectual functioning results in early school difficulties, which lead to frustration and behavior problems, which lead to alienation from school and often difficulties with parents. The end result of such a chain is typically high school dropout, which is then predictive of long-term employment and health problems.

The bottom line is that low intelligence, whether a product of inherited genetic capacities or environmental deprivation, is a powerful risk factor for a host of negative outcomes. Because poor children are frequently reared in homes by parents with relatively low levels of education who are struggling to make a living, their home environments often are antithetical to school readiness. In many cases the minds of children from poor and low-income families are underprepared for formal schooling. As a result, by early elementary school the measured intelligence of such children commonly is lower than for children of middle-income families and higher. Therefore, poverty and intelligence become interconnected as a particularly potent cumulative form of risk.

Temperament is another risk factor that has been studied widely, and, like intelligence, can be viewed either as primarily genetic or as an interaction of

genetics and the environment. Researchers such as the developmental psychologist Jerome Kagan (1984) define temperament as an innate, neurobiologically based predisposition toward interacting with the world and the people in it. Kagan has shown how variations in infants' levels of agitation and sensitivity to environmental stimuli can place them at varying degrees of risk for subsequent psychological and social adjustment. Infants who are easily agitated from birth and hypersensitive to environmental stimuli typically display greater degrees of difficulty over the course of their childhood and adolescent years, and into adulthood.

The research of Kagan and his colleagues has shown one particularly strong temperamental trait—inhibited versus uninhibited responses to the environment, particularly to novel experiences—that has clear implications for risk and resilience. Highly agitated and stress-reactive infants often show clear signs of caution and inhibition by early childhood and into the early school years. The reverse commonly is true of children who display a calmer adaptability to environmental stressors; they tend to become more assertive and less inhibited. Kagan and his colleague Howard Moss (1962/1983) followed inhibited and uninhibited children over time and found different adjustment profiles for each type. From a risk factor perspective, their findings show that extremely inhibited children in early elementary school typically have difficulties with peer relationships throughout childhood, and often suffer difficulties with self-confidence in adolescence and into adulthood. Extremely uninhibited children confront different risks. Their fearlessness can place them at odds with authority figures, including their parents and teachers, and as a result make it difficult for them to follow the adult directions required to succeed in school.

Like most temperament researchers, Kagan and his colleagues acknowledge that even though there is a strong biological component to temperamental styles, the environment plays an essential role in modifying and even shaping the contributions of temperament. Therefore, while the educational environment may not play a large role in changing temperament itself, it is a fundamentally important context for influencing the outcomes of temperamental dispositions. Through an innovative approach to working with withdrawn (inhibited) and aggressive (often uninhibited) children together, the social and

clinical psychologist Robert Selman (1997) has shown how structuring the interpersonal environment to meet the needs of temperamentally or psychologically different children can lead to important alterations in interpersonal functioning. Withdrawn children can learn to be more engaging with peers, given ample support, just as aggressive children can learn to be more considerate and cooperative. Selman and his colleagues (Selman, Watts and Schultz 1997) have used this model of pair therapy in educational and clinical settings to help children of varying temperamental dispositions adjust to each other, and, in turn, the larger world of interpersonal relations.

Renowned temperament researchers Stella Chess and Alexander Thomas (1995) view temperament strictly as an interaction between genetic predisposition and environmental receptivity. They do not consider the biological contribution alone to constitute temperament *per se*. Rather, contribution only becomes manifested as a temperamental style through the experience of being shaped by the environment. Their longitudinal research has shown that genetic predisposition alone is fairly limited as a predictor of subsequent adjustment, and that the nature of parenting or caretaking, as it interacts with genetic predisposition, is the primary determinant of what they term temperamental types. These types represent how children grow into temperamental responses to the environment, including school. The easy temperamental type is marked by low agitation and quick adaptability to varying situations and contexts. The difficult type, in contrast, is marked by high agitation to stimuli and poor adaptability. In the middle are the slow-to-warm-up types. They adjust and adapt more slowly and cautiously than the easy types, but show less agitation and anxiety than the difficult types.

As with intelligence, whether temperament is viewed as largely genetic or an interaction of heredity and the environment, it has been found to be an important predictor of developmental outcomes, both negative and positive. The Chess and Thomas (1995) model offers particularly important information for educators. Their research shows that the “goodness of fit” between the child and her environment is instrumental to the shaping of temperament and its consequences. Although temperamental styles are largely determined by the beginning of elementary school, if the school environment can work ef-

fectively with a difficult temperamental style, for example, it can help modify the impact of that style. Temperamentally difficult children are not fated to negative school experiences or other problematic consequences, but if the school environment does not provide a good fit for such children—that is, if it is not responsive to such children’s needs—it is likely that the temperamentally difficult child will develop a history of school resistance and related negative outcomes.

Whereas intelligence captures the cognitive or rational side of development, and temperament captures core physiological and psychological responses to the environment, attachment addresses the foundations of emotion-based experiences in childhood. By focusing on the early bonding experiences of children and their primary caretakers, particularly the mother, researchers have found that strong, stable attachment patterns emerge early on in life. Psychologist John Bowlby (1988) initiated a long line of research into what he termed attachment theory, which addresses the various processes through which children forge patterns of attachment bonds with their primary caretakers. Bowlby found that inconsistent and distant parenting processes tended to result in insecure or highly anxious attachment patterns within infants and young children, whereas warm and consistent parenting practices tended to produce securely attached children. Later generations of attachment researchers have found that early insecure attachment patterns make subsequent relational connectedness difficult.

Specific risks that have been found to result from insecure attachment patterns include the propensity to be distrustful, emotionally distant and unstable, and to experience low self-esteem. Children who have difficulties securely attaching to parents tend to have difficulties in later relationships as well. This pattern of relational struggle is an obvious precursor to the emotional difficulties experienced across a range of contexts. Students with profound attachment problems struggle in school on multiple levels. They have difficulties with peer and teacher relationships, and largely as a result of this they tend to struggle with self-confidence. Early detection of attachment problems is critical to longer-term school success. If educators can connect with socially insecure students and help them connect with their peers in constructive ways, then those students will be more likely to de-

velop a positive association to school. If, on the other hand, such students do not connect in constructive ways with their teachers or peers, they are placed at high risk for social isolation, depression, and suicide, or for connecting with peers in antisocial or self-destructive ways.

EXTERNAL OR ENVIRONMENTAL RISK FACTORS

The various internal or individual risk factors described above interact with environmental influences to result in a virtually infinite array of outcomes. Early psychological research on risk and resilience focused heavily on the notion of environmental stressors. Groundbreaking contributions from the psychologists Norman Garmezy (1986) and Michael Rutter (1990) were particularly important to better understanding the internal management of stress that is induced by highly noxious environments. When living under extraordinarily taxing psychological or social conditions, the individual body and mind must adapt in novel ways. While such demands to adapt to excessive stress can build strength, as will be discussed in the resilience section below, they also create mental strain, and carry the capacity to promote emotional breakdown.

While poverty, as discussed above, is associated with a wide range of environmental stressors, many forms of environmental risk exist apart from poverty as well. Child abuse is one of the most debilitating stressors, often resulting in immediate declines in educational and psychological functioning, and, depending on its nature and duration, is associated with a grim developmental prognosis. Sexual abuse, for example, is associated with social and psychological boundary violations, making it difficult for survivors of such abuse to form healthy intimate relationships with friends and subsequently with romantic partners. Physical abuse, on the other hand, can lead to students behaving in overly aggressive and violent ways, or to becoming timid and excessively fearful. Emotional abuse and neglect, while perhaps less dramatic, also leaves long-term scars, with children often internalizing negative self-portrayals or feeling that they are not worth the time of potentially caring adults. Whatever the form of child abuse, the stress experienced from it tends to overwhelm the healthy coping abilities of students, typi-

cally leading to one or another form of maladaptive behavior.

Child abuse in its varied forms represents an extreme end of the environmental risk continuum, and for that reason it warrants the degree of attention it receives from researchers and interventionists alike. Inadequate social support, on the other hand, is less dramatic and historically has received less systematic attention. But research in the areas of resilience, youth mentoring, and developmental assets, each of which are addressed in separate entries within this chapter, has served to heighten the national awareness of social support as critical to healthy developmental outcomes. Accordingly, the absence of adequate social support is now viewed as a critical risk factor in the lives of many children and youth.

Parental neglect is a particular form of emotional malnutrition. Because of the fundamental role played by parents and caretakers, parental neglect can be hard to overcome even when other social supports are available. Nonetheless, the resilience researcher Michael Rutter (1990) has shown that the availability of at least one caring nonparental adult, whether within or outside of the family, can compensate for the presence of other risk factors, including parental neglect and abuse. On the other hand, the lack of caring adults outside of the family is associated with multiple negative outcomes, including poor school performance. Students who seek support from peers at the exclusion of adults are especially at risk for school failure and delinquent or antisocial behavior. In what they termed a "problem behavior syndrome," researchers Richard and Shirley Jessor (1977) found that as youth distance themselves from the adult community they are placed at risk for developing a cluster of negative behaviors including poor school performance, aggressive and delinquent behavior, and early and unsafe sexual involvement. Like the risk chains discussed above, problem behavior syndromes emerge from an interaction of internal characteristics and external environmental influences.

Apart from caring adult influences, inadequate social support can result from a lack of structured activities for students. The afterschool or out-of-school-time movement, which has gained great ascendancy over the past decade, emerged from two separate research tracks. The first track showed that low-income students often did not have the family support necessary for completing required homework

or for engaging in educationally enriching activities. Afterschool programs were thus set up to address these educational disadvantages. At the same time, research was accumulating to show that community violence and related forms of antisocial behavior were escalating in the hours just after the school day, from 2:00 to 6:00 p.m. Afterschool programming was called upon to address this phenomenon. Therefore, educational risks and the risks of violence and antisocial behavior combined to fuel the proliferation of afterschool programming, which in turn has been viewed as a critical means for redressing the lack of social support in the lives of many children and youth.

It is important to note that the lack of social support is not exclusive to poor and low-income children. Highly educated, career-oriented parents have contributed to the latchkey child phenomenon, which is fundamentally a form of inadequate parental support. As hard-working parents, whether blue collar or professional, strive to progress economically and otherwise, children often pay a developmental toll. Economic resources only account for so much developmentally; children whose parents are either absent or overly stressed by the demands of work experience a lack of support which they typically seek to find elsewhere. When they find it primarily through peer connections, without a contribution from caring adults, the results tend to be negative.

Physical and mental health problems of parents constitute another form of environmental stress for children. The psychiatrist William Beardslee (1997) has shown the profound effects of maternal depression on children's educational and larger developmental outcomes. Children of depressed parents have higher school failure rates, heightened experiences of attention deficit disorder, and are more prone to social withdrawal and defiant behavior. Such children are also more likely to experience their own depression, and the negative outcomes associated with it, including suicidal ideation, increased drug and alcohol use, and school failure and dropout. Family depression is made particularly lethal because of the stigma of talking about it. Parents fear that addressing the issue will make life more difficult for their children, and as a result of keeping the secret hidden they exacerbate its negative effects. Common causes and consequences of depression include divorce, alcoholism, unemployment, homelessness, and other physical and emotional ailments. Untreated

depression, according to Beardslee (1997), is likely to erode or dramatically alter the sense of continuity in the family story, or the way the family sees itself. As the family story becomes progressively defined by the consequences of depression, children of depressed families come to see themselves in the light of these negative attributes.

The final set of environmental risk factors includes those that stem from the attitudes of society: racism, sexism, and homophobia. When children and adolescents experience pervasive messages that they are inferior due to their race, gender, or sexual orientation, the consequences tend to be profoundly negative. Institutionalized racism results in a lack of equal opportunity for members of racial minority groups in our society. This experience is a particular form of inadequate social support on one hand, but adds an additional psychological layer of stress as well. The message of institutionalized racism is that one is not worth supporting due to her racial group affiliation. Racial identity development researchers such as William Cross and Linda Strauss (1999) have found that African American students, for example, go through common phases or stages of racial identity development, based in part on experiences of racism in their schools and larger communities. A core stage is to actively oppose or resist the dominant culture in the face of racial stereotyping. If youth remain in this phase for prolonged periods of time, it has negative consequences for school performance and subsequent occupational success. It is important, according to Cross and other racial identity development researchers, that schools or other societal contexts provide safe spaces to explore experiences of racism in order for youth to move on in healthy and productive ways.

Similarly, gender development scholars such as Lynn M. Brown and Carol Gilligan (1992) have shown that girls approaching early adolescence often hide parts of themselves in order to cope with gender-based stereotypes that pervade both mainstream and youth culture. Many adolescent girls, for example, suppress their intellectual strengths and vocal assertiveness in order to “fit in,” or simply not be noticed. Sexism, whether it comes from explicit messages in the immediate environment or implicit messages that have been internalized over time, compromises opportunities for both males and females. The recent proliferation of studies of boys and young

men has shown a clear pattern of compromise as well. Many adolescent boys suppress their intellectual strengths in order to avoid taunts of being effeminate or a bookish “nerd.” As a means of overcompensating for potential perceptions of weakness, boys are at particular risk for acting out aggressively and engaging in antisocial behavior. Girls, on the other hand, are at higher risk for internalizing problems, such as depression and feelings of worthlessness. For both males and females, sexist stereotypes risk alienating students from their core strengths, and serve to suppress particular forms of educational achievement and intellectual creativity.

Homophobia is related to sexism, and in some respects is a particular form of it. Only recently have researchers begun to clearly identify the risks associated with sexual orientation for gay, lesbian, bisexual, and transgendered (GLBT) students. In response to the insults, threats, and ostracization they commonly experience, many GLBT students suffer extreme forms of anxiety, depression, and deflated self-worth. Suicidal attempts and completions are particularly high for this group of students, as are problems with drug and alcohol use. Just as researchers have found it important for racial minority students to have safe places in and outside of school to share their experiences and receive support, so too is that the case for GLBT students. Without such opportunities, such students are at increased risk for hiding their experiences within themselves, and turning their anger inward. The result of this strategy often ends tragically in such outcomes as addiction, school dropout, and suicide.

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RESILIENCE MECHANISMS

Healthy, well-adjusted children are not necessarily resilient children, according to the use of this concept in contemporary studies of risk and human development. Resilient children and youth are those who have faced unusual degrees of stress in their lives and yet have managed to cope relatively well. The studies of resilience that have emerged over the past quarter-century have in part been a response to the question: What allows some children from particu-

larly challenging backgrounds to grow into healthily functioning adolescents and adults while so many of their contemporaries get lost in the problems commonly associated with difficult living conditions? This question carries critical implications beyond the interests of basic research. If clear and supportable answers can be provided, the hope is that preventive and developmental programming might be created to help more children survive and even thrive in the face of adversity.

This entry presents contributions from classic studies of resilience that have shaped our current understanding, and more recent research that captures the cutting edge of resilience theory. Resilience is arguably the most popular and widely studied concept within the field of psychology today. After a century of investment in the study of psychopathology, the field of psychology has embarked on what it calls the “positive psychology movement.” The movement is intended to counterbalance our emphasis on understanding what goes wrong in human development at the cost of better understanding how to promote optimal functioning. The positive psychology movement is very much grounded in the concept of resilience, although the latter is only one particular form of positive development. As noted at the outset of this entry, healthy development does not necessarily imply resilience; ideally, healthy outcomes would emerge without the need to confront excessively health-compromising challenges. But because resilience research is rooted at its core in problems or risk factors, and is focused on responses to those problems, the study of resilience helped pave the way for a broader focus on optimal functioning or non-problem-based healthy development as well.

Just as the impact of risk factors is better understood by examining interlinking chains of risks or transactions among different types of factors, resilience is best understood as a mechanism or process, rather than as a singular factor or even collection of individual traits. In fact, many researchers argue that it is misleading to describe resilient children, as though they have particular characteristics that prevent them from harm. It is more accurate, they argue, to describe “resilience mechanisms” that show how various factors interact to allow particular children to confront risk successfully while others fall prey to its predictable negative consequences. Although we describe certain individual traits that have

been found important to the development of resilient responses to environmental stressors, we heed the caution that the labeling of resilient children can be just as misleading as the labeling of at-risk children. In that vein, an emphasis is placed on the mechanisms and processes that tend to build resilience in children and youth rather than presenting descriptions of resilient youth in contrast to those deemed to be at risk.

THREE FOUNDATIONAL MECHANISMS

The developmental psychologist Norman Garmezy was instrumental in establishing resilience as a defined field of research (Masten and Coatsworth 1998). He also was among the first researchers to carefully show that resilience emerges out of interacting human and environmental variables, and is therefore properly understood as a mechanism rather than as an isolated factor or even set of factors. Specifically, Garmezy and his colleagues (1988) articulated three types of resilience mechanisms, each of which interact with each other.

First, they discovered personality mechanisms that proved particularly helpful to accessing other forms of available support. It was not the personality traits or styles in and of themselves that led to resilient responses to environmental stress, but rather the processes by which certain personality types facilitated engagement with other resources. Specifically, personalities marked by a cheerful disposition tended to result in the adult community—teachers, parents, and other adults—reaching out in supportive ways in the face of inordinately challenging circumstances or profound losses. Similarly, assertive personality types were found to be more effective in gaining access to available resources. On the other hand, children who were more despondent or withdrawn were more likely to have difficulty receiving the support they needed in the face of difficulties.

By accessing adult resources, a resilient process is put into motion. Relationships are built that provide access to material resources, thereby allowing opportunity development in school or community settings. From these experiences, a positive sense of self or self-concept is likely to develop, along with a feeling of mastery or competence in multiple areas of functioning. As this larger mechanism

of growth evolves, youth are then able to cope more effectively with extreme difficulties that come along and to recover from past traumas that may have placed them at risk for more negative outcomes. In some of the resilience literature, this personality-based mechanism is referred to as support-seeking behavior. Children who develop the capacity to seek and successfully solicit adult support are more likely to survive difficult life conditions and ultimately thrive developmentally than those who have not developed this capacity.

Although the capacity to access support from the adult world is important to the building of resilient processes, there are dramatic differences in the degree of support potentially available to children and youth. Not surprisingly, Garmezy and his colleagues (1988) found the family system to be the core environmental contribution to the establishment of resilient mechanisms. If the immediate family unit is relatively supportive, stable, and cohesive, personality mechanisms are not as essential to the building of resilient processes. If children, whatever their personality disposition, are socialized into receiving support as a family norm, they learn to access it in other realms as well. The opposite holds when families are nonsupportive, unstable, and incohesive; such conditions make it particularly difficult to access support and develop the personal competence required to cope with stress and excessive challenges. In other words, the family system can generate its own resilience mechanism largely apart from personality. It can socialize children in ways that encourage positive self-concept, and help them build habits for engaging with learning, both formally and informally.

Fortunately, there is a third mechanism that allows children to build resilient responses to environmental challenges even if they are not of an optimal personality disposition or the beneficiaries of an adequately supportive family. External support systems are those that exist outside of the family, including schools, religious institutions, youth centers, and other community-based organizations. In many cases these external support systems intentionally reach out to youth who may otherwise be left without support precisely because of their personality styles or lack of guidance at home. Traditionally, counseling and intervention services in schools and community health centers were considered the primary resources for children in particular need of support. Today,

however, positive youth development programming has become increasingly more available, particularly as the resilience research depicts the importance of caring adult relationships outside the home. Mentoring programs are booming, as are afterschool programs. Although education often is addressed directly through such efforts, the establishment of close, supportive relationships with non-familial adults tends to be at the core of these programmatic mission statements. If such relationships can be developed, educational and other forms of competence are more likely to ensue.

These three resilience mechanisms—personality, family system, and external support—can work independently of one another in the development of resilience and, in fact, the family unit often is the primary source of stress to which the other mechanisms must respond. However, the most potent resilience processes emerge from the convergence of these mechanisms. When the conditions of each mechanism are favorable, children are in the best position to healthily cope with the stressors they encounter. For example, poor children living in dangerous neighborhoods stand the best chance of thriving if their personality style allows them to access adult support; their family unit is relatively supportive, stable, and cohesive; and they have access to external supports in their schools, neighborhoods, or faith communities.

PROTECTIVE FACTORS

The dynamic conception of resilience mechanisms evolved from a prior focus on protective factors. Working during approximately the same period as Garmezy and his colleagues, the British psychologist Michael Rutter (1990) became interested in learning how it is that many children living in adverse conditions develop healthily. After originally conceiving of protective factors as the converse of risk factors, Rutter soon developed a more complex model in which protective factors were defined exclusively as helpful to individual growth only under conditions in which particular risk factors were present, and only in response to specific outcomes. As a simple example, the presence of supportive afterschool programming would prove helpful to educational outcomes or relationship development only for students at risk for poor school achievement or relationship

problems. For students not experiencing risks in these areas the outcomes would remain unaffected; that is, the low-risk students would not be negatively affected but neither would they be positively affected because there is no need for change. The relationships between risk factors, protective factors, and developmental outcomes can be much more complex than this, of course, but Rutter's model held under all conditions: protective factors were defined as exclusively beneficial to youth facing particular risks for particular outcomes.

Rutter's (1990) original research from the 1970s combined with Garmezy's (1986) to spawn a burst of research focused on the identification of resilience processes, which came to be understood as a dynamic relationship among risk factors, protective factors, and specific outcomes. This emphasis on specific relationships among variables was important to countering the myth that certain traits serve resilient purposes across all conditions. A strength, like athletic prowess, might prove beneficial in one context while creating risks for low-academic achievement in other contexts. The direction set by Garmezy and Rutter made clear that risk and resilience needed to be understood in context. On the other hand, however, the complexity of their situation-specific models created concern that all resilience findings were relative and somewhat idiosyncratic and that little had broader-based implications.

This concern led to other approaches to addressing protective factors, in which complex protective processes were juxtaposed with findings showing that certain qualities or experiences serve an important developmental function for all youth, whether or not they are at risk for particular outcomes. Two psychologists from New Zealand, David Fergusson and John Horwood (Fergusson, Horwood, and Lynskey 1992) followed children in their native country for more than two decades and learned that key factors which served a protective function for children living in adverse conditions also played a positive role in the lives of those who were not at high risk. In presenting their findings they differentiate the protective factors into two categories of processes: protective processes and compensatory processes. The former fit the classic definition of protective factors articulated by Rutter (1990); they interact with risk factors to mediate or reduce the negative impact of the risk factors on selected developmental outcomes.

Compensatory processes, on the other hand, describe dynamic interactions that prove to help all children grow healthily, whatever the risk status of the particular child. For children living in relatively low-risk conditions, compensatory processes allow them to adapt to and cope with everyday or typical levels of stress.

Key factors found to serve protective and compensatory functions for children include high cognitive ability or intelligence, strong attachments or relationships with parents and with peers, and high self-esteem. Whether a child was deemed to be at high risk for negative outcomes or within a normal range of risk, each of these factors contributed to adaptive processes associated with positive outcomes.

RESILIENCE AND THE DEVELOPMENT OF COMPETENCE

The psychologist Ann Masten is an early colleague of Garmezy's. Through their collective efforts and her partnerships with other colleagues (Masten and Coatsworth 1998), Masten came to see the development of competence in various domains as critical to understanding resilience (Masten and Reed 2002). While competence commonly is a marker of resilient behavior in children and youth, it is not necessarily the cause of resilience. Rather, the two are related to one another and are likely the products of similar health-promoting processes. As youth develop competence in various arenas, however, they are likely to respond resiliently to subsequent challenges or adversities they confront.

Masten and her colleague J. Donald Coatsworth (1998) have shown how cultural context plays a crucial role in the development of social and behavioral competence. They found that resilience among children living in particularly adverse conditions is manifested as competent adaptive responses to culturally or contextually specific stressors. Each context or larger culture poses developmental challenges or tasks that children must meet successfully in order to survive and thrive. Some of these developmental tasks hold across cultures, such as learning to connect meaningfully with caregivers, peers, and other acquaintances. Children who do not develop the competence required to address this task will likely suffer in virtually any culture. Other tasks, including educational success, are culturally determined and the

nature of competence in these areas is relative and variable.

The foundations of subsequent competent behavior begin to develop very early in the life cycle. The development of early motor skills, for example, is necessary to meet developmental challenges in the physical domain. Children who display strong motor skills early on tend to experience mastery at home, on the playground, and subsequently in school. Early experiences of joy and self-worth are derived from childhood physical accomplishments. Language development also allows children to engage the world of potentially supportive adults. Success in this arena is especially rewarded in cultures that value verbal skill and literacy-based education. Meeting the developmental tasks of language development in a timely manner places children on track for successful academic accomplishments and the psychological rewards that brings within many cultures.

Motor and linguistic skills combine in early childhood and beyond to build self-confidence, and to allow for successful play both alone and with peers. In other words, early competence in these basic areas increases the likelihood of developing more complex competencies as children get older. Advanced manifestations of competence include motivational dispositions (the motivation to achieve in school, in athletic pursuits, and in relationships) and self-efficacy, or the sense that one is essentially competent in specific domains. The motivation to take on complex challenges evolves out of the early experience of success in accomplishing more basic tasks. In this regard, success breeds success. As children experience competence they take on progressively more challenging tasks, the end result of which is a solid sense of self-efficacy or the belief that one can successfully meet the demands of environmental context.

Masten's studies have resulted in the articulation of a developmental schema for building competence, with implications for formal and informal education (Masten and Reed 2002). During infancy and throughout the preschool years three primary systems of interaction contribute to the development of competence. The first are what she terms attachment systems. The experience of building relationships with caring adults allows for the development of problem-solving skills in toddlers. It also contrib-

utes to the second primary system of early childhood: self-regulation of emotions and stimulation levels. Self-regulation of emotion and stimulation allows for effective exploration of the environment. Early experiences of self-regulation are critical to subsequent success in the classroom and with peers. Young children who struggle with self-regulation are at greater risk for anxiety, depression, and aggressive behavior during the school years and beyond.

Compliance and prosocial behavior grow out of self-regulation, and, like the prior systems of interaction, are essential to subsequent educational achievement and social adjustment. Parenting styles play a key role in the development of compliance and prosocial behavior. Parenting styles that include consistency, care, warmth, and firmness are most likely to lead to compliance and prosocial behavior. Compliance is not to be confused with passivity here, but is rather the willingness to comply with adult norms and expectations due to a history of trust and early support. Authoritarian, controlling, and hostile parenting styles, on the other hand, are associated with lower levels of compliance and internalization of prosocial standards. Similarly, parenting styles that lack consistence and firmness are associated with the development of unclear boundaries and ambivalent responses to adult expectations.

During the school years, Masten and Coatsworth (1998) found that social competence with peers, socially appropriate conduct in and outside of school, and academic achievement were the hallmarks of competence. Students who manifest skills in these areas typically are able to respond resiliently to everyday challenges. Social competence with peers has clear roots in early parenting and self-regulation processes. Young children who experience rejection or lack of support from their parents, tend to respond with heightened degrees of aggression in school. They tend to make hostile attributions to benign social interactions, often leading to fights with peers or social ostracization. This problem is compounded when ostracized children seek the support of each other, often linking one set of maladaptive social skills with another. Conversely, socially competent children tend to find one another, thereby building upon each other's strengths and increasing their collective competence within their schools and communities.

Socially appropriate conduct is the school-age equivalent of early childhood compliance. Building

on the foundation established largely within the family in early childhood, school-age children take cues from teachers, other adult authority figures, and peers as they learn how to abide by general norms for constructive social interaction beyond the family. If children do not learn socially appropriate conduct in the early years of formal schooling, academic achievement tends to deteriorate over time. This pattern is quite self-explanatory as negative reactions to teachers' directions are a common manifestation of socially inappropriate conduct. Given the power of early schooling as a predictor of later educational success, early competence in the social domain is critically important to the development of competence educationally. Academic achievement is, of course, influenced by a host of factors outside of social conduct, including cognitive abilities, beliefs, attitudes towards school, and the motivation to succeed. As the school years progress, each of these factors becomes more strongly associated with one another and with social competence. In short, patterns of competent behavior emerge that tend to blend these individual contributions into a larger coherent dynamic.

Nancy Davis (1999) has built on the work of Masten, Coatsworth, and others to define six types of competence associated with resilience. The first is physical competence, which includes good health, along with the more common indicators such as athletic performance and physical attractiveness. Second is social and relational competence, stemming from strong early attachment experiences. Insight and self-awareness are aspects of social and relational competence that are important throughout childhood and become progressively more complex in adolescence. Third, cognitive competence includes basic intelligence as measured by IQ and emotional understanding. It also includes language acquisition and reading skills. The ability to learn from one's environment and plan ahead is an important marker in this area. Emotional competence is the fourth type delineated by Davis. It includes the capacity to regulate emotional responses and the ability to delay gratification. Realistically high self-esteem, creativity, and a good sense of humor are additional outcomes of emotional competence.

Moral and spiritual competence conclude Davis's typology. Moral competence reflects the ability and desire to contribute to society. This requires the ca-

capacity to reason morally, and to experience empathy and generosity. The hallmark of this competency area is the capacity to act fairly out of a sense of caring for others and an appreciation for equity and justice. Spiritual competence is rooted in the capacity to find meaning in life, whether that occurs through religious involvement or other forms of spirituality. For adolescents, organized religion has been found to serve a powerful protective role in the face of adverse life conditions, in part because of the supportive structure available through religious institutions, and in part because of deep prosocial beliefs associated with organized religion.

HOPEFULNESS AND FUTURE ORIENTATION

By middle adolescence, youth who have developed tangible and realistic ideas of what they want to do in the future are more likely than those without such conceptions to exhibit resilient responses to adversity. The Finnish researcher Jari-Erik Nurmi (1991) describes three key processes that comprise an orientation to the future: motivation, planning, and evaluation. Motivation refers to a desire to accomplish particular goals. Planning reflects the realistic thinking required to make such motivation a reality. And evaluation refers to the self-assessment of progress toward meeting one's goals, along with the ability to modify both the goals and the associated plans for achieving. The ongoing cycle of motivation, planning (and acting according to the plan), and evaluating represents a healthy and realistic future orientation. According to Nurmi, these interactive processes play an important role in identity formation in adolescence as young people become identified with their future direction, and build a sense of self-efficacy as that direction is successfully acted upon.

Finally, many researchers have found hopefulness to be one of the most obvious indicators of resilience. Hopefulness is as much an end product of a developmental trajectory defined by competent behavior in the areas described above as it is a contributor to resilience. As with most of the concepts presented in this entry, hopefulness is representative of a dynamic process rather than being an isolated trait of certain individuals. As children and youth meet the challenges of their lives with support from the environment in a manner that allows

them to build competence, they become more hopeful that they can respond successfully. Again, success breeds success. Hopeful youth are likely to have realistic plans for the future, and successful action taken on behalf of those plans leads to a further increase in hopefulness. Self-confidence is a common result of this dynamic process, and, if utilized prosocially it contributes not only to individual resilience but also gets manifested in contributions to the community, which in turn creates opportunities for future generations of children and youth. In short, resilience is best understood as an endless interconnected human cycle rather than as a static trait of strong individuals.

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RISK AND PREVENTION

Theory, research, and practice in the broad area of prevention has grown dramatically over the past quarter-century. This trend is attributable to a variety of intersecting factors, the most influential of which come from the field of public health. By studying the causes and correlates of such deadly diseases as cancer, heart problems, and diabetes, public health researchers set the groundwork for preventive interventions in the medical field. By more accurately understanding how diseases develop, it became possible to strategically prevent their occurrence or at least reduce their further escalation. Successful prevention efforts in the medical/physical realm encouraged mental health and education specialists to pursue similar strategies.

In the mental health area such persistent problems as depression, addiction, and antisocial or criminal behavior became early focuses of prevention efforts, while in education the emphasis was placed on school failure, dropout, unhealthy peer relationships, and school violence. Over time the list of issues on which prevention efforts have focused has mushroomed, just as approaches to preventive interventions have taken a multitude of forms. Still, the results of prevention efforts in and outside of schools have been mixed. Prevention theory, derived from ongoing research, has grown more sophisticated, allowing for progressively more focused and strategic interven-

tions. At the same time, however, funding for prevention research and practice has been inadequate to allow for definitive answers to questions of best practices, cost effectiveness, and related implementation concerns.

A challenge to prevention work in the mental health and education arenas is that the critical issues tend to be complexly influenced. It may be easier to isolate the common causes of physiological pathology than it is mental health and education problems. Because these latter concerns are so multi-influenced, researchers must rely on complex correlational models of potential contributing factors rather than isolating single risk factors or causal processes when designing their studies. These complex studies rarely lead to simple results. Further, because it typically is difficult to name “the cause” of the problem at hand, it is similarly difficult to influence public policy in the direction of prevention program funding. The end result of this struggle is that most prevention work is funded through patchwork entrepreneurial efforts, and little of it has sufficiently adequate evaluation funding to study the effectiveness of the particular approaches within their particular contexts.

In the education realm, the current emphasis on standardized, high-stakes testing has deterred schools and school systems from taking any curricular time away from those key content areas to be covered by the exams. In this climate, prevention efforts are at times viewed as a distraction from the “core mission” of the school. As a result, there has been a reversion back to reactive behavioral interventions targeting the highest-risk students. If time, effort, and resources are not invested in early prevention and health promotion, it only stands to reason that the problems those approaches are designed to address will crop up in greater magnitude as the students progress throughout the school years. In this entry the core elements of prevention are presented, with an emphasis on educationally related prevention programming, including the current state of the research and evaluation on particular prevention models.

PRIMARY PREVENTION

Certain preventive approaches are targeted toward entire populations without regard to risk level or

vulnerability. In the public health arena, advertising campaigns promoting seat belt use successfully targeted the entire United States population, resulting in widespread reductions in car accident deaths. This finding can be juxtaposed to advertisements focused on drinking and driving, which clearly are targeting a category of drivers at particular risk for car accidents. In the education arena, formal schooling itself has been referred to as a form of primary prevention: all children of a particular age are targeted for literacy and numeracy training to build skills that will make them more employable, and thereby less at risk for problems associated with joblessness and poverty. Early intervention efforts to address literacy and numeracy delays, on the other hand, are targeted to particular at-risk populations.

Primary prevention refers to those approaches that target entire populations without regard to risk status, and is differentiated from early intervention or other forms of prevention, which are described below. In the world of education, primary prevention historically has been linked with the practice of developmental guidance. Today, virtually all school systems around the country have guidance programs, which conceptually are designed to address common developmental concerns that have implications for all students. Making friends is an example of an early elementary school concern: all children need to develop friendship-making skills to help prevent isolation, loneliness, aggression, and violence. By middle school, universal prevention themes include a focus on self-esteem and sexuality awareness, in part as prevention against precocious and unsafe sexual behavior. And by high school all students should have an opportunity to explore career options as a means of avoiding the aimlessness and identity struggles that can result from a lack of connection to meaningful career directions.

Despite the thoughtfulness of early developmental guidance models, the practice of school guidance largely has been reduced to monitoring student progress in order to obtain academic support or mental health treatment where needed. At the high school level it also consists of helping students select courses and apply to college or vocational training programs. Although these tasks are important, the guidance counselor's role has been stripped of many of its developmental and primary prevention functions. As a result, where primary prevention exists

in public schools it often is provided by outside programs or partnering organizations. Violence prevention programming provides one of the clearest examples of outside agency involvement in United States schools. As it became clear that violence in its many forms was touching the lives of students across all social strata, violence prevention became a primary prevention activity: it was being target toward all students, not just those with a history of fighting or victimization.

SECONDARY PREVENTION

When prevention efforts are applied to at-risk students, they typically are secondary prevention initiatives. Secondary prevention refers to those approaches that target students who do not necessarily show any of the signs or symptoms of the problems being addressed, but who are deemed to be at particular risk for experiencing those problems in the future. For example, children living in highly impoverished and violent neighborhoods are at higher risk for subsequent fighting and victimization than those living in less violent neighborhoods. High-intensity violence prevention programming might be provided to students in the schools of such communities; this would be a form of secondary prevention due to the high-risk nature of the population.

Many early childhood programs that are labeled "early intervention" approaches are actually secondary prevention initiatives. The widely implemented Head Start program provides one of the best-known examples of secondary or targeted prevention. Its pioneering founders Edward Zeigler and Julius Richmond conceived of Head Start as an ambitious attempt to provide poor parents and their children with the school readiness skills necessary for early educational success. Because the majority of poor and low-income parents do not have the educational training or the material resources to adequately prepare their children for formal schooling, many students of such families fall behind early, become frustrated, and consequently lose interest in school. Head Start was conceived as a targeted effort to reduce the likelihood that these school-based problems would occur or become seriously compromising. The research on Head Start showed that although it was effective in helping to level the playing field in the early elementary school years, its benefits were often lost over

time. That is, students from high-risk backgrounds often succumbed to their risky living conditions if not provided with consistent educational and social support well into their formal education years.

Mentoring and afterschool programming are two additional examples of secondary prevention. The psychologists Jean Rhodes (2002) and David DuBois (DuBois, Holloway, Valentine, and Cooper 2002) have conducted important research on the effectiveness of youth mentoring as a preventive intervention for at-risk youth. Building on a seminal finding from the resilience literature that one strong relationship with a non-parental adult helps youth build resilience, Rhodes (2002) and host of other researchers (DuBois and Karcher) have studied both formal and natural mentoring relationships as contributors to resilience and healthy development. Formal youth mentoring is defined as a one-to-one relationship between an adult and a child or adolescent. Typically, the youth participants are deemed to be at-risk either by virtue of being raised in a single parent, low-income family, because they are struggling in school, or because they live in a community marked by poverty or violence. The adult mentors tend to be volunteers who are not trained in a child development, mental health, or education field. Given who the mentors are, most mentoring approaches take on a “nonprofessional” orientation, with a focus on mutually interesting recreational, artistic, or educational activities. The primary purpose of the activities is to help build a strong relational bond, which can be experienced as a source of support in the face of everyday stress.

Although the research on formal mentoring has shown somewhat mixed results, Rhodes and her colleagues have shown that mentoring relationships are commonly experienced by youth as positive and supportive when the relationships last at least one year, when the mentoring match meets at least twice per month, and when the mentor is viewed as flexible, kind, and firm rather than rigid and “agenda-driven.” In those cases where the relationships are viewed as positive, youth are more likely to show subsequent signs of thriving both academically and socially. In an extensive critical overview of the youth mentoring research, DuBois et al. (2002) concluded that mentoring is indeed an effective preventive intervention for at-risk youth when the conditions are right. The right conditions include adequate training and

supervision for the mentors, thereby increasing the likelihood of meeting consistency, match longevity, and, importantly, the capacity to effectively link the mentoring relationship with the child’s home and school life. As the mentor builds bridges between the match and other contexts, the larger support network is enhanced thereby providing a more coherent web of resilience-building relationships.

Afterschool programming also builds on the resilience research showing the importance of supportive relationships for at-risk youth. Because so much of violence and related antisocial activity occurs immediately in the hours following the school day, afterschool programs became seen not only as supportive educational opportunities for students at risk for school failure, but also as social development contexts for students at risk for community violence and related problems. Although the afterschool movement is now booming, the research in this area is even more mixed than it is for mentoring. The lack of definitive findings on afterschool programming largely is due to the fact that there is less coherent theory guiding efforts in this area. Some programs are highly structured and educationally oriented, whereas others are less structured and recreationally oriented. Despite the unclear results, educators and youth development advocates clearly are sold on the general notion. The good news here is that innovative models are continuously being developed, with new research models being designed to study the benefits of these newly emerging approaches.

TERTIARY PREVENTION

Interventions designed to prevent existing difficulties from becoming more severe constitute tertiary prevention approaches. Whereas secondary prevention targets students at risk for negative outcomes, tertiary prevention targets those who are beginning to manifest precursors or symptoms of the targeted problems. Students who are failing in school and have chronic absenteeism problems, for example, are often targeted for dropout prevention approaches. Such students have moved beyond risk for the problem and are already showing symptoms associated with its occurrence. Similarly, students who get in fights in school are recruited for targeted conflict resolution programs such as mediation training. These programs are not only designed to address existing

difficulties, but also to prevent the escalation of these early difficulties into larger, more complex problems.

Tertiary prevention can exist very early in the life cycle and programs often are implemented in the earliest grades of formal education. The risk factors entry of this chapter outlines many of the risks associated with negative outcomes. In some cases those risks are problems in and of themselves, and are predictive of more serious problems in the future. A clear example is early reading difficulties. Risks for these difficulties include neurological impairments or injuries, along with low levels of parental literacy, and inadequate early education. But these reading problems themselves are predictive of more severe academic delays. Therefore, early intervention into the problem serves as tertiary prevention for more substantial academic impairments. Intensive literacy interventions in preschool and the early primary school years are correlated with higher academic achievement and lower educational difficulties in subsequent years. This improved academic achievement, in turn, serves as a protective factor against other social and behavioral problems.

In general, the earlier interventions are introduced and the more intensively they are implemented, the more likely it is that they will serve a preventive role in reducing substantial, longer-term problems. This principle holds in the academic and social development realms alike. As presented in the resilience mechanisms entry, the development of competence in any number of domains builds strength that helps counteract the stressors of daily life, including the stresses associated with existing problems. Because the development of competence is a complex, ongoing, interactive process, the earlier it begins and the more fully it is supported, the more likely it is that the particular competence will be developed successfully. And the more highly developed the competencies across different functional domains, the more powerful is their preventive influence. Not only does early competence beget later competence (success builds success), but early and sustained competence counteracts problems as well (success helps prevent failure).

The counseling and developmental psychologist Michael Nakkula and his colleagues (Nakkula and Ravitch 1997) have developed a tertiary prevention approach for primary, middle, and high school students. Called Project IF (Inventing the Future), this

approach works with students referred for traditional counseling services within the schools, but rather than providing remedial interventions, the project begins with a strengths and interests assessment and focuses on the development of those areas over the course of one or more academic years. This model is appealing to students because of its positive orientation. It allows students who typically are identified for their problems to receive support and encouragement in the development of their skills and interests. At its core, Project IF is a competency-building approach for students already manifesting the difficulties that place them at high risk for school failure and dropout. Nakkula and his colleagues have shown how the Project IF model sustains students' interests in receiving multiyear support, and have outlined multiple implications for identity development derived from their approach. For school practitioners, the model is attractive because it utilizes a traditional counseling framework (students are referred to receive individual or group support), while offering a more positively oriented intervention that is consistent with recommended directions in the fields of psychology and youth development.

ELEMENTS OF SUCCESSFUL PROGRAMMING

In an important summary of existing research on risk factors and successful prevention programming, writers Lisbeth and Daniel Schorr (1988) articulated a list of best practices that largely fall within the category of secondary prevention; that is, they target at-risk populations. At the top of their list they prioritized interventions that provide family planning support for poor and low-income teens. This would occur through addressing the needs and interests of youth so that they feel a stake in their own futures. The birthing of unwanted children, according to Schorr's review of the research literature, leads to a host of problems for those children and the young women who raise them. Family planning is best conceived of as a form of secondary prevention; it targets youth who are deemed to be at risk for early and unwanted pregnancy. Large urban school systems have sporadically engaged in such prevention work, but local and national politics related to the discussion of sexuality in schools—particularly discussions that are not abstinence-based exclusively—

has led to inconsistent use of such approaches.

Schorr and Schorr (1988) also cited the importance of public health approaches that provide enriched forms of prenatal care, thereby preventing or reducing the likelihood of poor health and malnutrition. For a long time, malnutrition and other basic healthcare needs went undiagnosed in efforts to understand the early educational failures of poor and low-income children. Addressing these basic needs, according to Schorr, would reduce the need for other, more complicated interventions. In what would be most accurately described as a blend of secondary and tertiary prevention, Schorr argued the need for more widely available interventions that provide intensive social and family support for neglected and abused children. She found that interventions often are provided for the symptoms of such problems without ever acknowledging the underlying family difficulties. Without addressing these core problems, educational and other remedial efforts are doomed to failure.

Finally, Schorr argues that high quality preschools, child care, and elementary schools can help children to acquire the skills necessary to becoming independent and productive. In short, she argues for a host of early preventive interventions for at-risk populations, primarily those that are poor. As the lessons from Head Start suggest, however, even successful early interventions do not assure long-term success. It has become progressively clearer that the higher the risk the more intensive and sustained must be the intervention approaches. Good education, for example, cannot stop at the end of primary or middle school. Similarly, high quality prevention and intervention services for high-risk populations must continue throughout the developmental spectrum. Resilience researchers and developmental specialists concur that it is critical to simultaneously attempt to ameliorate risk factors and enhance competencies and related protective mechanisms. Doing so requires careful interdisciplinary collaboration.

As researchers from diverse disciplines have shown, eradicating hunger and malnutrition, addressing vision problems, and intervening in child abuse, for example, are critical prerequisites to successful efforts in supporting cognitive and social competencies in the primary school years and beyond. Nurses cannot do this work on their own; neither can teachers, counselors, or parents. The psychologists Martha

Burt, Gary Resnick, and Emily Novick (1998) have poignantly shown how broader community supports are needed to enhance the development of at-risk children and youth. They emphasize the integration of services in a manner that links schools with families and the larger community. Integrating services within schools is inadequate, they find, given the influential roles of parents, peers, and community factors on students' development. The critical challenge, as the authors points out, is not in determining how best to provide integrated, comprehensive support for youth, but in building the societal commitment to fund such efforts. Focusing on academics alone is efficient and cost effective, but in the case of those students who are at greatest risk for academic failure due to psychological and social challenges, such efficiency is both educationally and developmentally ineffective.

A great deal of research has converged on the finding that holistic interventions that deal with multiple factors, contexts, and levels (individual, family, community) are more effective than those that focus exclusively on one variable, aspect, problem area, context, or level. Similarly, the earlier such comprehensive approaches begin, the greater is their positive impact on multiple facets of development including juvenile delinquency, teen pregnancy, and unemployment in young adulthood. The psychologist Ann Masten (Masten and Coatsworth 1998; Masten and Reed 2002), whose work is presented in the resilience mechanisms entry, summarizes comprehensive prevention work as being (1) risk-focused, with an emphasis on eliminating, preventing, averting, or reducing targeted risks; (2) resource-focused, with an emphasis on providing the critical health and educational resources required for successful coping and development, and (3) process-focused, with an emphasis on influencing the adaptation systems (individual, family, and community) that are tied to competence, relational attachment, self-efficacy, and behavioral self-regulation. While there is little debate within the prevention field over such comprehensive approaches as that articulated by Masten, such clearly articulated approaches rarely survive due to cost, commitment, and management challenges.

In the entry that follows, a comprehensive model for building developmental assets is presented. This model assumes a community-wide commitment and

provides a clear research-based framework in support of its approach. Perhaps most importantly, the model is being widely tested at the community level for cost and commitment sustainability.

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DEVELOPMENTAL ASSETS: FROM PREVENTION TO PROMOTION

Developmental assets are the fundamental nutrients—strengths, skills, and supports—young people need to be healthy and vibrant, both in the present and in the developmental transition toward adulthood. Just as childhood difficulties, particularly severe forms of psychopathology, serve as strong precursors to subsequent adjustment problems in adulthood, childhood strengths are important predictors of adult well being. But because childhood and adult dysfunction often create a pronounced disturbance in the surrounding environment, “problems” have captured the attention of service providers and professional youth practitioners, while youth strengths and attributes have gone largely unexamined. The end result is that child and youth development professionals, other than teachers, have learned much more about problem remediation and prevention than about the promotion of optimal child, youth, and adult development.

This emphasis on deficit reduction and prevention, and relative lack of focus on strength-based development, has been severely challenged over the past fifteen to twenty years. The field of psychology has embarked on what is now called the “positive psychology movement,” which is an organized effort to infuse resources into research, practice, and theory-building approaches devoted explicitly to the development of health, well being, and optimal human functioning. The emerging field of youth development is now organizing almost exclusively around positive development tenets and practices. The developmental assets framework is a product of this climate. It is an effort to organize, deepen, and implement existing strength-based developmental knowledge.

Although the term “developmental assets” is at

times used generically in reference to the strengths or attributes people possess, it is most commonly linked to the specific research and implementation model or framework developed by the Search Institute in Minneapolis, Minnesota, under the leadership of youth development scholar and advocate Peter Benson. Search Institute’s Developmental Assets Framework is an organized categorization of internal characteristics (internal assets) required for healthy development, and external supports (external assets) needed to cultivate those characteristics. Overall, the framework presents forty essential assets: twenty internal and twenty external, with both of these primary groupings divided into four more specific clusters (Scales and Leffert 1999).

FROM TREATMENT TO PREVENTION

The movement toward a developmental assets or positive psychology approach to child and youth development has evolved through clearly detectable steps within the social sciences and related applied disciplines, such as education, counseling, and social work. The impact of psychoanalysis in the early twentieth century, and subsequent psychodynamic approaches to understanding the mind, served a dual role in organizing the mental health fields around mental illness, or psychopathology: it promised access to the long-hidden mysteries of the mind, and it held out genuine possibilities for reducing mental anguish. Psychoanalysis was conceived by Sigmund Freud as a means of unlocking those mysteries of the mind that lead to distortions in mental functioning—distortions in everyday behavior as well as distortions that influence behavior in maladaptive and sometimes bizarre ways. The early documented successes of psychoanalysis in treating particular psychological problems, aided by Freud’s unique gifts of insight and writing skill, spurred on the enormous popularity and influence of his intrapsychic approach, and led to the broader practice of psychotherapy. Through a singular stroke of genius, it seemed, Freud had unlocked fundamental mysteries of the mind, and created a new “talking cure” for mental illness. Although innumerable variants of psychotherapy have emerged over the past one hundred years, they have shared one common core: they have been designed to treat individual or social problems (Seligman and Csikszentmihalyi 2000).

As the fields of psychiatry and psychotherapy advanced, early intervention emerged as an effort to treat problems before they were exacerbated into full-blown pathologies. Just as psychiatry grew out of the field of medicine and emphasized diagnosis and cure, various forms of psychotherapy grew from their respective disciplines—such as psychology, social work, and education or learning theory—and the characteristics of those disciplines. Psychology-based psychotherapy, for example, drew from studies of human behavior and perception to create alternative therapy models. Behavior-based studies showed that behavioral patterns—both healthy and unhealthy—could be shaped dramatically by systematic forms of reinforcement. Similarly, studies of perception showed that human interpretations of reality could be as powerful as objective experiences in shaping certain forms of social behavior and emotional adjustment. Such findings from psychology and related disciplines led to forms of therapy that targeted early symptoms of pathology rather than addressing full-blown psychological problems. These breakthroughs in behavior modification therapy and cognitive behavioral therapy carried important implications for working with children and adolescents. If psychotherapy could target symptoms in children before they developed into adult psychopathology, more extensive forms of human suffering might be prevented. In this sense, early intervention into identifiable problems served as a bridge to what later became known as problem prevention.

The field of problem prevention emerged largely from the discipline of public health. Whereas early intervention typically uses counseling and psychotherapy to target symptoms before they escalate into full-blown problems, prevention uses educational strategies to prevent problem development. To briefly summarize material from the prior entry primary prevention targets general populations in an effort to prevent particular problems from emerging. For example, because smoking and drinking are associated with health problems for a broad range of the population, these issues have been common targets of primary prevention efforts in the public schools. Rather than targeting high-risk subgroups of students, primary prevention targets entire populations. Secondary prevention, on the other hand, is aimed at subgroups of students or other people who are deemed to be at particular risk for

a specific problem. Students who are failing school are deemed to be at risk for subsequent dropout. Therefore, dropout prevention programming targeting these students is an example of secondary prevention. Tertiary prevention is aimed at preventing already existing problems from getting worse. To stay with the same example, students failing in school might be recruited for an academic improvement program designed to improve their grades. The goal here is not to prevent dropout per se, but to prevent further decline in academic performance; the problem already exists and the goal is to prevent it from continuing or getting worse.

Treatment or remediation, early intervention, and prevention are three related and varied approaches to addressing student problems. The movement from treatment to prevention emerged from a desire to address problems before they emerged or became severe. The commonality across these approaches is that they are all problem or deficit oriented. The most recent shift in student and youth development is the move from problem to possibility, or to a strength-based orientation. The developmental assets framework is part of this shift.

FROM PREVENTION TO POSITIVE DEVELOPMENT

Whereas prevention is designed to keep bad things from happening, positive development is explicitly designed to bring about good things. Long-time leaders within the field of psychology, in particular, have recently called for the investment of intellectual and financial resources into the study of positive, healthy, and optimal development. Positive development is generally viewed as developmental functioning that brings about constructive or desired ends. For example, skill development in different domains brings about successful performance in music, sports, academics, and other areas. Healthy development, as a form of positive development, generally refers to behaviors associated with positive mental and physical health. Just as living in highly stressed environments can contribute to mental and physical deterioration, living in highly nurturing environments can bring about positive self-esteem and good physical health. Finally, optimal development refers to the behaviors associated with those exceptional achievements that only occur through sustained ef-

fort. According to many psychological researchers, we know much more about the sources and escalation of pathology, and much less about the dynamics that yield positive outcomes, such as healthy and optimal functioning.

As a result of the call for more investment in positive development, many new initiatives have emerged over the past ten to fifteen years. Rather than strictly examining the antecedents to school failure and dropout, for example, more research is now focused on the processes that lead to school success and exceptional achievement. A goal of this research is to uncover common methods for supporting successful school and related student behavior, so that these goals can be integrated into schools across the country, as well as globally. Two related phenomena—resilience and developmental assets—have become central to the positive development movement and are the focus of a great deal of student support reform efforts in U.S. public schools.

RESILIENCE AND DEVELOPMENTAL ASSETS

As discussed in an earlier entry of this chapter, resilience emerged from studies of risk, and is conceptualized as the processes or mechanisms through which children and adults respond to crisis, trauma, and chronic challenges to healthy development. As the resilience research grew over the past thirty years, practitioners as well as researchers became interested in the implications of this concept. Applied questions began to emerge. For example, are there particular aspects of resilience that can be promoted by clinicians, educators, parents, and other caring adults? Can individual resilience responses be identified and nurtured in practice? Can schools and communities be organized in ways that cater to and promote resilience? Questions like these, combined with the growing psychological research on resilience and related health-promoting processes, led to the concept of developmental assets.

Particularly instrumental to the emergence of the developmental assets concept was the notion that resilience should not be conceived of strictly as an individual trait or characteristic. The notion of resiliency suggests that the properties of resilient behavior are traits or characteristics of people, rather than active processes or mechanisms that emerge through

individual interactions within their environments. Two psychologists, Norman Garmezy and Michael Rutter (1988), pioneered research that showed how resilience is best understood as an interactive process rather than an individual trait. This is not to say that resiliency, as an individual trait, does not evolve through interactions within one's environment. But the research of Garmezy, Rutter, and others shows that although particular biological characteristics can contribute to the development of resilience, all people have the capacity to form more or less resilient responses to their environments.

The developmental assets framework, described in detail below, drew from this conception of strength emerging through individual-environmental interactions and explicitly articulated both sides of the coin: the individual and the environmental. Accordingly, developmental assets have come to represent the inner strengths that individuals develop and the external supports needed to promote that development. This two-sided coin is an effort to bring the resilience literature into the hands of practitioners who are eager to promote positive development within their communities. By defining and naming the inner strengths and external supports found in the resilience-related literature, the developmental assets provide a language that practitioners can use as they articulate the goals and implement the strategies for their work.

DEVELOPMENTAL ASSETS AS SOCIETAL INVESTMENT

The investment language implied in the term “developmental assets” is intentionally constructed to convey two related meanings. The first intent is to differentiate the asset approach from the deficit or problem-based models of human development discussed previously. The more we study and respond to deficits the better we understand them, and the more oriented to them we become. The same logic holds for assets. The architects of the developmental assets model were proponents of a youth advocacy-based political agenda. Their goals included changing the primary orientation toward youth from a deficit- to a strength-based perspective, and thereby altering the approaches through which youth development practice and applied research is organized.

The second intent is built upon the first. If the

orientation toward youth can be shifted toward a strength-based approach, and youth become viewed as community resources versus community problems, then perhaps national and international policy can be created to promote this valued resource. This clearly capitalistic language—a language of investment and resources development—is designed to reach across the political divides by bringing investors of all types into the business of promoting youth development. Such development is not only in the interest of children, youth, and their families, but it also is in the best interests of our communities, our country, and our world. If our youth are our future, including our future workforce, then it is in everyone's interest to cultivate that resource fully. This mindset attempts to extract youth development responsibility from the exclusive domain of parents, educators, and professional practitioners, and make it the responsibility of all those who serve to gain from the health and productivity of our young people.

THE DEVELOPMENTAL ASSETS FRAMEWORK

As discussed briefly above, the developmental asset framework is an effort to organize the resilience-related research into a usable model for practitioners and applied researchers. Unlike basic researchers who study issues for the purpose of advancing a particular branch of scientific inquiry, applied researchers study the impact of particular phenomena, processes, and interventions on issues that affect targeted outcomes. Applied educational researchers, for example, study the impact of pedagogical or curricular modifications on learning outcomes. Applied developmental researchers study the impact of new youth programs on participants' attitudes, behaviors, and targeted experiences. Whereas evaluation research examines the relative success of programmatic initiatives and the processes that lead to such success, applied research is less focused on success and failure *per se*, and more focused on the nature or experience of the processes and outcomes associated with programs or related initiatives. In addition, applied research often is focused on specific aspects of interventions and their impact on participants rather than examining overall success or failure.

Just as the developmental assets framework is designed to provide a much-needed strength-based lan-

guage for practitioners, it also helps applied researchers focus on aspects of development that are relevant to practitioners. In this sense, the framework serves as a bridge between applied research and developmental practice. It allows both sets of professionals to speak a common language, and focus on related phenomena.

As noted previously, the developmental assets framework is divided between external and internal assets. After thoroughly reviewing the resilience-related literature, the architects of the framework settled on twenty external assets that they could clearly identify and define, and twenty internal assets. Clearly, the reality of the literature is not so symmetrically organized, but the authors decided to present their findings in a format that could readily be digested and utilized. If they had provided a more finely differentiated synthesis, the framework would be more difficult to fully comprehend and utilize. If they provided a less differentiated framework, it would have been too crude and superficial to be useful. In this sense, the framework is a compromise between research rigor and practical utility.

EXTERNAL ASSETS

As described above, the external assets are those social and environmental factors that nurture healthy development. The developmental assets framework includes four basic clusters of external assets: (1) support, (2) empowerment, (3) boundaries and expectations, and (4) opportunities for constructive use of time. For educators working with all youth, including those at highest risk for negative outcomes, an understanding of these external asset clusters may serve to organize strategies for effective teaching and development.

The support asset cluster emphasizes the supports youth can receive from family and community resources, particularly through close, caring relationships. In addition, supportive relationships with nonfamilial adults have been found in numerous studies to be important to nurturing healthy development among at-risk youth. Of the six assets constituting the support cluster, two are school specific: caring school climate and parent involvement in schooling. A great deal of research has shown how critical a caring school climate is to the promotion of inner strengths, including an internalized desire to achieve

academically and to become successful in the future. Research has also found parent involvement in their children's schools to be an important environmental support. The linking of two key contexts, home and school, creates a strong support network for students, and is especially important to those students who are most vulnerable.

The empowerment cluster consists of four assets that contribute to youth feeling a sense of efficacy in their lives and in the world. The first empowerment asset is the valuing of youth by adults in the community, including the school community. Youth who genuinely feel that they are valued by parents, teachers, and other adults are more likely to grow healthily and experience success than those youth who feel devalued. While virtually all educators understand this phenomenon, struggling students repeatedly report feeling devalued by teachers. The next two empowerment assets are interrelated: youth as resources, and youth as service to others. When youth are viewed as resources and given important roles in their schools and communities, including roles that allow them to be of service to others, they are more likely to build a sense of self-worth. Finally, the provision of a basic sense of safety is critical to helping youth feel empowered to act with a measure of purpose in their schools, families, and communities. Building safe schools is essential to creating opportunities for youth to feel valued, to be used as important resources, and to be of service to others. In that sense, safety is a cornerstone of the empowerment assets. Without a safe beginning point, it is virtually impossible to move forward confidently.

The boundaries and expectations cluster is composed of six assets, one of which is called school boundaries. It suggests that schools must provide clear rules and consequences in order for students to function in an organized manner that increases the likelihood of school success. Disorganized schools are particularly troublesome for students who are in high need of structure, such as those with learning disabilities and anxiety disorders. Adult role models is another asset within this cluster. Teachers, along with parents, are especially important candidates in this area, as they have the daily opportunity to model responsible adult behavior. Positive peer influence is important as well. Specifically, peers become especially strong social and academic influences as students reach middle

and high school. The nature of peer interactions, then, holds important implications for school success and social functioning. Finally, high expectations are essential to success in all arenas. For struggling students, it is critical that support is provided and expectations are not lowered. Without high expectations and ample support students are likely to descend to the lower level of expected functioning.

The last external asset cluster—constructive use of time—includes two assets particularly relevant to school: creative activities and youth programs. Creative activities, such as music, theater, and the arts, are important to cognitive development and to the cultivation of broadly educated citizens. The decline in opportunities in these areas, particularly in poorer school systems, is devastating to those students who may struggle in other areas but show a strong inclination toward the arts. Similarly, youth programs such as sports, clubs, and afterschool programs provide opportunities to build a variety of skills, including social and leadership skills. An additional asset in this cluster, time at home, also is affected by school. While it is not the school's responsibility to structure time at home, the nature and quality of homework is critical in this arena.

The external assets are best understood as an environmental or social network. Although family, community, and school are individual contexts, they also are interrelated. In that sense, the external assets need not be considered separately but as a larger gestalt. Each part of this gestalt affects the others. Safe, supportive, and creative school environments engage students in ways that influence the other environments in which students function. So while schools should not be overly blamed for the multitude of psychosocial as well as educational challenges students face, educators must also fully comprehend the power of their roles in influencing the lives of their students. Understanding the ramifications of the external assets can help cultivate that comprehension.

INTERNAL ASSETS

Like the external assets, the internal assets are divided into four basic clusters. The first cluster, commitment to learning, reflects the attitudes and behaviors that students need to grow educationally.

Achievement motivation captures the desire to perform well in school. This desire is highly related to school engagement, or the experience of being actively engaged in the school-based learning process. Students found to have adequate levels of achievement motivation and school engagement are more likely to report a consistent commitment to doing their homework, and a positive feeling of connection (bonding) to school. Daily homework, school bonding, and reading for pleasure all have shown strong correlations with positive development within the educational arena, but also with prosocial development more broadly. A commitment to learning tends to signify a commitment to healthy development in general.

The second internal cluster, positive values, is composed of six interrelated assets. Caring reflects the value young people place on helping or caring for other people. The capacity to care for others is highly correlated with one's own level of support, and in that regard a caring young person tends to depict one who herself is well cared for. Equity and social justice is strongly correlated with caring, and captures an interest in reducing social inequities, hunger, and poverty. Integrity represents the capacity and willingness to stand up for one's own beliefs, even when under pressure to do otherwise. This asset is often paired with honesty, or the young person's willingness to tell the truth, even when it is not easy to do so. Responsibility and restraint are the final two assets in the positive values cluster. The former captures the willingness to take responsibility for one's own actions, whereas the latter depicts the belief that it is important not to be sexually active or to use alcohol or drugs. Although this final asset sounds more like a value judgment than a research finding, results from adolescent development studies have been clear that restraint, as defined here, is associated with a host of other positive outcomes.

The third internal cluster, social competencies, includes five basic social skills that have received the clearest research support to date. Planning and decisionmaking captures the young person's ability to plan ahead and make choices consistent with such plans. This competency is highly related to growth in cognitive development during adolescence and to an emphasis on future orientation, which, in turn, requires skills in impulse control or self-regulation. Interpersonal competence reflects the development

of empathy, sensitivity, and related skills required for making and sustaining friends and ultimately romantic partners. In a diverse society such as the United States, cultural competence is an essential skill, reflecting the knowledge, comfort, and willingness necessary to effectively interact with people of backgrounds different from one's own. Resistance skills have been widely studied through resilience research, with studies clearly showing that the ability to resist negative peer pressure is instrumental to sustained, healthy development. Finally, peaceful conflict resolution skills allow youth to resolve conflicts without undue escalation, thereby preventing harm to self and others. Such skills not only allow for healthy and safe self-development but also contribute to the cultivation of safer, more peaceful communities.

Positive identity marks the final internal asset cluster. The cluster largely depicts the synthesis of the other internal and external assets. As youth are supported externally in the development of internal strengths, they inherit a positive view of themselves and their place in the world. A feeling of personal power, or the belief that one has control over her destiny, is central to this experience. Self-esteem is perhaps the most well known of the identity assets, and simply reflects a positive feeling about one's self and one's accomplishments. Having a healthy sense of personal power and self-esteem allows one to develop a clear sense of purpose in the world, which reflects the healthy antidote to the popular identity confusion phenomenon that has been so widely studied among adolescents. And, ultimately, all of these identity features facilitate a positive view of one's personal future. More commonly referred to as "future orientation" in the adolescent development literature, the capacity to have a positive view of one's future has repeatedly been linked with a wide range of healthy outcomes.

In combination, these eight asset clusters—four external and four internal—represent a comprehensive overview of the resilience and positive development literature. Following their synthesis of this literature, Peter Benson and his colleagues at Search Institute have studied the extent to which these assets are found among populations of youth across the country. Based on outcomes from this research they have spawned a national movement designed to put the developmental assets framework into action (Lerner and Benson 2002).

STUDYING AND CULTIVATING DEVELOPMENTAL ASSETS

Through surveys administered across the country to thousands of youth, Search Institute discovered a convergence of important and startling findings. On the positive side, strong inverse correlations were found among the developmental assets and high-risk behavior. Specifically, the more assets reported by youth, the lower their self-reported level of risk-taking behavior in the areas of heavy alcohol use, drug use, violence, and sexual activity. Just as positively, strong positive correlations were found between the developmental assets and leadership behavior, school success, health maintenance, and the valuing of diversity (Scales and Leffert 2004). In short, the picture is very clear: developmental assets are highly associated with a range of prosocial behavior and disassociated with a range of risk-taking behavior.

What is startling, however, is that less than half of the students across the country experience a majority of the assets. Sixth through twelfth graders average 19.3 assets total, out of the forty possible, with 56 percent of them averaging less than half of the assets. Only 9 percent of students nationwide report thirty-one assets or more. Given the fairly basic nature of the assets, researchers originally assumed that the majority of youth nationally would experience the vast majority of the assets. That clearly has turned out not to be the case. To make matters worse, the asset totals systematically decline as youth get older, with twelfth graders reporting substantially fewer assets than sixth graders (Scales and Leffert 2004). This finding coincides with independent research that shows systematic declines in adolescent prosocial behavior over time. In other words, youth report feeling under-supported and progressively less engaged in prosocial behavior throughout the middle and high school years. This pattern is especially robust for youth living in poor and dangerous neighborhoods where the quality of schooling is particularly inadequate.

In response to this rather grim profile, Search Institute initiated the Healthy Communities–Healthy Youth (HC–HY) Initiative in an effort to promote the cultivation of developmental assets among youth nationwide. Since 1997 approximately six hundred communities across the country have joined the initiative, which means they have committed to focusing on at least three

of the developmental assets and have involved at least three community sectors in an effort to cultivate those assets in their young people. One of the primary goals of HC–HY is to make asset building a community priority rather than a professional one only. In this vein, the HC–HY initiatives work to involve sectors such as the police force, business, and the faith/religious community in asset building, rather than rooting the work strictly in the education, youth development, and human service sectors. This national movement has grown widely over the past seven years, with innovative models cropping up across all fifty states.

Counseling and developmental psychologists Michael Nakkula and Karen Foster of the Harvard Graduate School of Education have partnered with Search Institute’s Director of Applied Research Marc Mannes and his colleagues as external evaluators to examine the impact of these community initiatives (Mannes, Lewis, Hintz, Foster and Nakkula 2002). This “internal/external” team has utilized an in-depth ethnographic approach to study the work of eight communities from different regions of the country. Their findings show that each initiative tends to work especially well with particular sectors and struggle somewhat more with others. Some, for example, work systematically with schools to promote asset development within the school setting. These initiatives bring outside partners into the schools, including police officers and business partners, and organize this work explicitly around asset-building approaches. Others work more closely with the business, faith, and youth development sectors and tend to locate their work outside of the school building. Whatever the emphasis, however, all of the HC–HY initiatives struggle to keep funders committed to such a broad-based mission as community-wide asset building, and all of them are dependent on a combination of strong, wise leadership and deep grassroots involvement.

Only now, after several years of implementation, are the HC–HY initiatives beginning to see improvements in their reported levels of developmental assets. Still, however, large numbers of youth in these communities are not yet reached by the initiatives, and that gap in support services has become a focal point of more recent efforts. In fact, it seems clear from the Harvard-Search Institute study (Mannes et al. 2002) that the developmental assets approach quickly reaches youth who are most reachable, while the harder-to-reach, more at-risk youth continue to

be engaged by prevention and remediation services. Perhaps as a result of this, the HC–HY communities are beginning to develop blended models of support in which approaches to cultivating developmental assets are built into primary, secondary, and tertiary prevention programming. These blended models represent some of the most comprehensive efforts to date for reaching a wide range of youth through a diversity of support services.

Michael J. Nakkula and Claudia G. Pineda

RISK AND RESILIENCE AMONG IMMIGRANT STUDENTS

Globalization, defined by historian John Coatsworth (2004) as the accelerated and growing movement of people, goods, and services, or ideas among countries and regions, is one of the most significant phenomena of our time. It is transforming political and social landscapes around the world, and is altering the experiences of youth and adults alike. As one of the most significant components of the globalization trend, international migration presents immense challenges to governments, families, school systems, and students. This is especially true for industrialized countries, the destination for large numbers of immigrants. The 2000 census reported 32.5 million foreign-born people in the United States, equivalent to 11.5 percent of the total population. While immigration to the United States is not a new phenomenon, there have been significant changes both in the type and the magnitude of the immigration influx over the past hundred years. As reported in the census (Schmidley 2003) the number of foreign born in the United States grew by 57 percent in the last decade of the twentieth century. And while in the 1920s the first large wave of immigrants came mostly from European countries, most immigrants now come from Latin America or Asia.

MIGRATION: GLOBALIZATION AND DIVERSITY

Immigrants today come with similar expectations, optimism, and willingness to work hard as did their

counterparts from the early 1900s. However, current immigrants are met with a different reception. The American labor market has assumed what economists refer to as an “hourglass” configuration: as the middle narrows, the majority of the workforce either is pushed toward the upper realm of the economy, where occupations increasingly require a high level of education, or downward into a market dominated by menial jobs. Immigrants in past eras, many uneducated and poor, often managed to climb the social and economic ladders through blue-collar jobs, assimilating into the American culture as they moved along. In contrast, present-day assimilation and upward mobility can be more challenging. An increasing number of immigrant racial minority groups face racism and discrimination in various forms, making it difficult for them to follow the steps of prior newcomers, most of whom were white Europeans.

Researchers agree that the future prospects of immigrants depend on many different factors, such as reasons for emigrating (forced versus voluntary), the context of reception (labor market, perceptions of racism and discrimination), families’ resources (socioeconomic status and educational experiences), and the characteristics of their new communities (integrated and supportive communities versus segregated or isolated ones). There is no longer one primary path to incorporation, but rather a diversity of pathways, some of which are conducive to success while others lead to marginalization, depending largely on the aforementioned exit and entry situations.

A great deal of diversity exists even within immigrant families, where children and adults can experience immigration in vastly different ways. Immigration is a major life transition that presents children and adults with particular tasks and challenges that practitioners and policymakers must consider carefully. In the case of education, many regions are currently faced with a large influx of immigrant children, making it necessary for schools to make adjustments in order to successfully educate all children. The school experience plays a much larger role than it did previously in helping or hindering newcomers in their efforts to be successful. It is, therefore, imperative for those involved in educating immigrant children to understand the circumstances that affect such a significant portion of their student population. Even more importantly, educators must

recognize the ways in which some immigrant factors can place these children at risk while others can become a source of strength.

Common reasons for immigration include reuniting with family members, seeking better job opportunities, escaping violence, or furthering education. In the United States, immigrant families historically have settled in major cities, such as New York, Miami, Los Angeles, and Chicago where they have networks of relations, either family or friends. Increasingly, however, immigrants are settling in places without a strong history of immigration, but which have become attractive destinies due to job opportunities, thus creating a necessity for these communities to adjust to the needs of newcomers.

There also is variation in migratory status. Some immigrants come to the United States with legal status as family members of naturalized citizens seeking reunification; as either skilled or nonskilled workers promoted by certain policies or quota systems, such as the case of professionals from India and Eastern Europe who provide technological skills; or as political refugees. Others come without legal status, also representing a diverse group ranging from unskilled workers to professionals. Undocumented immigrants are especially vulnerable to exploitation and discrimination, and often have the most difficulty accessing social services and making a living wage. Furthermore, the events of September 11 have dramatically changed the situation of many immigrant families, both documented and undocumented, who are fearful of and discouraged by the attitudes and policies resulting from increasing concerns about terrorist activities in the United States.

The socioeconomic backgrounds of the immigrant population in the United States fall into a bimodal distribution. Marcelo Suárez-Orozco and Mariela M. Páez (2002), immigration scholars, have pointed out that immigrants are among the highest educated and most skilled workers in the United States in certain respects. For example, they are overrepresented in the group of people with doctorates. In other respects, immigrants tend to be among the least educated. The *Statistical Profile on the Children of Immigrants* by the National Center for Children in Poverty (2002) has estimated that one in every four poor children has at least one parent who is an immigrant, and that this group's prospects of remaining poor throughout their lifetime and un-

dergoing hardships are very high. This statistic speaks volumes when one considers that at least one in five children in the United States is either an immigrant or the child of an immigrant.

Sociologist Min Zhou (1997) claims that immigrants constitute the fastest growing and most ethnically diverse segment of the student population. Like their parents, children come from various socioeconomic backgrounds. Some will be the children of educated, professional parents, while others will come from poorly educated, low-income families. They will certainly present a variation in native language spoken, and the extent to which they speak English. The New York public school system has counted 140 spoken languages. In short, immigrants are anything but a homogeneous group, and many will have to endure the challenge of learning a new language, assimilating into the hourglass-shaped economy, and gaining enough education to "make it" in their new context.

STRESS, ADAPTATION, AND ACCULTURATION

Most immigration studies have focused on adult processes of adaptation and acculturation. Although recently there has been a growing amount of attention paid to immigrant children by both scholars and practitioners, there still exists a void in studies that illuminate the mechanisms of risk and resilience particular to these children. Researchers tackling this issue within the field of immigrant studies face the challenge of disentangling the effects of such simultaneous influences as normative development, acculturation to a new country, and adaptation to new challenges.

Psychologists Cynthia García-Coll and Katherine Magnuson (1997) have pointed out that while theories have outlined the effects of different variables, often those theories lack empirical grounding. As for those studies that are empirically sound, most of the findings on the effects of immigration have been based on clinical samples, resulting in an orientation toward the negative impact of immigration, rather than a consideration of the possible positive outcomes. García-Coll and Magnuson also argue that a developmental perspective entails the consideration of normative adjustment and development, both of which take place as part of the acculturation processes. More recently, theories are focusing on the

resilient characteristics and benefits of immigration. This shift is reflected in the growing recognition of constructs such as biculturalism that describe the experience of immigrants who become competent and comfortable navigating between their own and the mainstream culture.

While factors such as poverty, poor schooling, and medical ailments have a similar effect on all children, there are circumstances that uniquely affect immigrant students. The migratory experience is a major life transition and can be very stressful, because it often includes: experiences of loss and grief; family separations and reunification difficulties; issues of mental health and psychological trauma, sometimes related to war; discrimination and prejudice; and stress related to illegal immigration status. Not all families react in the same way to such stressors, nor is immigration always a painful and deleterious experience. Yet, some of these factors tend to be common and get exacerbated or ameliorated by the presence of other risk or resilience mechanisms in the lives of immigrant families. Overall, immigration is a transformational experience that is likely to affect development in important ways. Following is a discussion of these factors in light of the dialectic between risk and resilience.

LOSS AND GRIEF

Immigration entailing losses related to children and families leave behind important social relations, including extended kinship networks. In that sense migration has been compared to the death of a loved one. In addition to this loss, the person leaves familiar places, rituals, customs, and even loved objects. Celia Jaes Falicov, a clinical professor at the University of California, views migration as a “small death” in that the process is not clear, complete, or irretrievable, and immigrants ultimately find ways to deal with this loss (2002). The longing for familiar sights, smells, and sounds may surface following migration, or years later depending on the coping strategies families use to deal with their loss.

Developmentally, there are differences between younger and older children, especially related to friendships. García-Coll and Magnuson (1997) argue that for younger children, friendships can mean someone to play with, while for older children friends are sources of emotional support, changing the im-

pact of what losing friends can represent. Likewise, if older children are not in agreement with the decision to move, and usually it is the case that parents make the decision alone, this can result in resistance and influence a youth’s attitudes towards adaptation. Despite, and in part due to, these developmental challenges, the skills required to adapt to the stresses of migration can result in immigrant children becoming particularly competent in navigating the challenges of cultural diversity that are important to successful functioning in a pluralistic society such as the United States.

FAMILY SEPARATION AND UNIFICATION

Studies of immigration show that families often separate to ease the settlement in the new country. Children are frequently left behind with relatives or other caregivers, while parents or single parents seek financial stability to be able to bring their children with them. In fact, the main reason for immigration continues to be family reunification. In a five-year longitudinal study on immigrant children, conducted with five ethnic groups (Mexican, Dominican, Haitian, Central American, and Chinese), Carola and Marcelo Suárez-Orozco (2001) found that only 20 percent of the four hundred children studied traveled as a family unit in the process of immigrating to the United States; the rest had been separated from either one or both parents.

But reunification is not always smooth, especially when the separation involves years. Children may actually experience reunification as a second loss, the first having been of the parent and the second being of the substitute caregiver. The effects of parental separation are felt especially by young children between six months and four years of age, during the time when they are forming important attachments to caregivers. Studies have shown that antisocial behavior and “acting out” against the mother is associated with children who are separated from their mothers at a young age. This separation also is known to result in maternal feelings of guilt and failure. In addition, immigrant children may have to adapt to a new family unit, where the presence of new siblings can generate feelings of jealousy and exclusion.

The way in which the separation is framed and understood by parents and caregivers influences the

way children will interpret it. In the Caribbean culture, leaving children with relatives is not uncommon and children may not experience a parent's departure as abandonment; on the other hand, in a different context mothers who leave their children behind may be seen as neglectful, thus creating ambivalent feelings among children and parents upon reunification.

Reunification also requires adjustment by parents and children, since rules and other disciplinary practices have to be renegotiated. Parents may become stricter in order to protect their children in neighborhoods where violence and drugs are prevalent. In her study of West Indian families in New York, sociologist Mary Waters (1997) describes conflicts around cultural differences in the conceptions of punishment, whereby West Indian parents view physical punishment acceptable as a way to educate children, while many American parents view this practice as abusive. Such cultural differences can lead to intervention by authorities. In turn, parents can feel disempowered to deal with their children's upbringing, lacking the social support available in their communities of origin. An aggravating factor is that of the long hours worked by parents, often at low-paying jobs, making them less available for their children and leaving the youngsters without adequate supervision. Waters found that in the process of reunification there is often a bi-directional acculturation fear or loss-based trauma, with children feeling that their parents have been Americanized and parents fearing for their children's Americanization.

FAMILY ROLE CHANGES AND ADAPTATION CONFLICTS

Immigration requires families to reorganize and cope with stresses related to this major life transition, such as changes in jobs, housing, healthcare, and social relations, all of which can be very disruptive. Families may feel a lack of control and competence in the new environment, in part because their routines are disrupted, but also because each culture has particular ways of dealing with developmental changes and transitions, including celebrations or rites of passage. These cultural scripts may not be adaptive in the new context. Psychiatrist William Beardslee (1997) found that recent immigrants often experience depression, especially if they do not speak the

language of the host country. In addition, changes in gender roles are common with males and females assuming more traditional gender-based functions than might have been the case in the home country. During the transition, males typically focus on the present material needs (instrumental), while females typically provide emotional support (affective). While these changes may be adaptive at the beginning, over time they can result in dysfunction if one of the family member's acculturation is retarded, generating feelings of isolation.

Through schooling, children tend to acquire the new language more quickly than their parents, and often serve as translators in different situations, both institutional and informal. Having children participate in activities that typically are reserved for adults, such as translating medical appointments, can create conflict due to confusion and blurred boundaries, which both children and adults can come to resent. Simultaneously, the competence required to carry out these adult-oriented activities can serve children well; hence the impact is largely dependent on how these actions are interpreted within the family and understood within the larger community.

For immigrant parents who have mixed feelings about American culture the process of raising children can be particularly confusing and stressful. In adolescence especially, the effects of immigration can exacerbate normative generational conflicts between youngsters and parents. Common conflicts include the expression of sexuality and aggressiveness, assertion of independence and individualism, and involvement in sports and academics. In addition, if parents are depressed or have ambivalent feelings about the immigration, they can become less available to their children emotionally, which can result in the children experiencing more difficulties that compound their own sense of loss.

REFUGEE CHILDREN

Compounding all the stresses of immigration is the experience of coming to a new place as a refugee. Refugees and asylum seekers often have been exposed to violence and war. They leave their countries of origin because they fear persecution for reasons of race, religion, nationality, or affiliation with a particular social group or political opinion. Sharon Russell, a researcher at the Center for International

Studies at the Massachusetts Institute of Technology, estimated that at the end of 2000 there were approximately 14.5 million refugees and asylum seekers around the world (Russell 2002). Refugees come mostly from Asia, Europe, and Africa. In the year 2002, 58,000 people requested asylum in the United States. But not all those who request asylum are granted refugee status, and for those families this usually means either returning to the country where they may have suffered persecution or seeking a second country that might accept their petition. These experiences obviously influence the process of adaptation to a new culture.

Refugee children commonly experience more stress during immigration because of their having lived through severe forms of violence, warfare, loss, and deprivation. Unlike those migrants who choose to leave their countries for other reasons, refugees do not always have the opportunity to plan and to prepare emotionally for the move. Studies report that refugee families tend to suffer more undesirable changes and feel less control over their lives. Traumatic experience can cause Post Traumatic Stress Disorder (PTSD). Symptoms of PTSD in children vary depending on the severity of the injuries, degree of violence, and their developmental moment. Children's symptoms often go untreated, in part because there is little research in this area.

García-Coll and Magnuson (1997) noted a host of challenges to refugee children's development resulting from the trauma they have experienced. Young refugee children can show anxious attachment, appear withdrawn, and lose functional, communication, and social interaction skills. School-age children can become rude, irritable, and argumentative, and commonly display somatic symptoms. The academic achievement of refugee students tends to decline over time. Adolescents may engage in antisocial behavior and lose impulse control, be ostracized, and become pessimistic. Refugee children placed with foster parents upon arriving in the United States may experience the stress of adjusting to a new family. It is clear that for refugee families the receiving community plays a key role in their adaptation. In dealing with refugee children, it is critical to consider their war-related experiences and potential traumatic sequels in order to understand their needs. At the same time, multiple studies show that most refugee children ultimately do well, over-

come difficulties, and become healthy. By definition, the majority of healthy refugee children are resilient, having overcome extraordinary obstacles to their social and emotional development.

MIGRATORY STATUS

Lack of proper immigration documentation is perhaps the one most confounding and stressful circumstance immigrants can face. Based on the March 2002 Current Population Survey, Jeffrey Passel and his colleagues estimated that there are approximately 9 million undocumented immigrants in the United States, of which 41 percent are women (Passel, Capps, and Fix 2004). The survey reports about 3 million children who are U.S. citizens born here but to undocumented parents, and approximately 1.6 million under eighteen years of age who are undocumented. Illegal status is a major barrier for accessing social services and makes these populations vulnerable to exploitation. Undocumented parents tend to make much less money than their naturalized counterparts. In many cases, immigrants experience downward mobility, and, despite their professional credentials in their country of origin, they are often forced to work menial jobs. Passel et al. note that undocumented immigrants make less than half the minimum wage. In order to make ends meet parents must work long hours. The prolonged absences from home leave their children lacking in the supervision and emotional support necessary to adapt in the new country.

In families that are composed of both legal and illegal members, namely mixed families, policies aimed at increasing deportation or "removal" (the technical term used in immigration law) can dramatically affect the children's well being. Jacqueline Hagan and Nestor Rodriguez, co-directors of the Center for Immigration Research at the University of Houston, conducted a study on the effect of the 1996 U.S. Immigration Reform, which limited access to public services for immigrants, made it more difficult for immigrants to sponsor their families, and expanded criminal enforcement activities (Hagan and Rodriguez 2002). They found that those measures had a detrimental effect on families, negatively affecting their income and creating tremendous fear of deportation. Often the parent who was the breadwinner was deported, leaving their families behind

without the means to support themselves. In addition, fear prevents families from accessing resources to which they are entitled or going to authorities when they are the subjects of abuse and violence. Fear also disrupts important family routines and can preclude families and children from participating in extracurricular activities. In the case of the health care system, common illnesses in children go untreated, such as visual impairments or ear infections, and often families end up having to cover the full cost of expensive bills, while still lacking proper health care.

Despite the large number of undocumented families, there is little research on the impact of “illegal” status on children. Their status may make it difficult to trust school authorities, but perhaps the educational impact of being undocumented is most severely felt by adolescents who have been educated in the United States but who cannot easily access higher education. While there are no figures on dropout rates of undocumented youth, studies show that future aspirations play a critical role in school achievement and in predicting dropout, thus for these children, the discouragement associated with not being able to use their education to pursue college and get better economic opportunities often leads to school disengagement, which correlates with dropping out. Those resilient children who remain connected to school and manage to graduate with a high school diploma cannot access the opportunities of their documented or mainstream counterparts. There are two main barriers to undocumented youth accessing college: first, most states’ public higher education institutions are mandated to request students’ proper documentation in order to apply for college; second, limited financial assistance is available to undocumented immigrants.

Even if they have received most of their education from an American institution, undocumented students do not have access to tuition subsidies available to other in-state residents, based on a federal statutory law that forbids states to provide illegal immigrants with tuition assistance. If such students are determined and able to enroll in college their fees are likely to be twice as high those paid by regular in-state students. This fact substantially reduces the likelihood of undocumented immigrant youth continuing their education; those who do persist tend to have a considerably prolonged course of study.

Stories abound of youth who excelled in their schools, were accepted into elite institutions, possibly even with scholarship offers, only to then be denied entrance and financial aid due to their immigration status. The events of September 11 have made their situation worse due to heightened measures aimed at immigrants. For many undocumented youth encountering these obstacles, the consequences can be quite severe, including experiences of hopelessness, despair, and clinical depression.

Out of concern for the plight of undocumented children, the Senate Judiciary Committee recently approved an amendment to the *Development, Relief and Education for Alien Minors (DREAM) Act*, which would allow certain undocumented students to gain conditional permanent resident status. The policy is designed to help prevent the deterrence of students’ motivation and hope, and allow them instead to become full participants and contributors to American society. The political argument is that denying undocumented youth the opportunity to gain a college education is to condemn them to the status quo: low-paying, low-skilled jobs, often as part of the underground economy perpetuating conditions of poverty and risk. In response to the viewpoint that undocumented immigrants are a financial burden to society, the amendment to the DREAM Act argues that it is less costly in the long run to provide the young generation with educational opportunities that will reduce subsequent costs while simultaneously increasing economic productivity.

DISCRIMINATION AND PREJUDICE

Large numbers of immigrants have settled in inner-city neighborhoods with great racial segregation, low-quality schools, problems of violence, and weapons and illegal substances made readily available through underground economies. The result of not having the infrastructure needed to better integrate immigrants into the larger society has disenfranchised many youth who, seeing their hopes shortchanged, become resentful. Anthropologist Diego Vigil (2002) traced back the origins of the Chicano street gangs in Los Angeles to discrimination, segregation, inadequate infrastructure, and the unwillingness of traditional white institutions to integrate Mexican youth back in the 1930s. A problem that started with a few street boys developed into an epidemic in which large num-

bers of children were being socialized in the streets generation after generation.

Despite many gains in civil rights and changes in societal attitudes since that time, prejudice and racism persist nonetheless. The perceptions of and attitudes toward African American people have factored significantly into the experience of immigrants, a fact often not accounted for in theories relating to immigration. Black immigrants, such as those from the Caribbean and West Indies, often confront the negative images of African Americans that are projected upon them. This requires that they either resort to their national identities or else adopt an African American identity. Though not necessarily negative, this second option may promote in these immigrant youth a belief that they are unlikely to succeed in the United States.

Psychologist Carola Suárez-Orozco uses the term “social mirroring” to describe how the images or reflections that others mirror back to individuals represent a critical function that influences the development of one’s identity (Suárez-Orozco 2000). When those reflections are positive, feelings of competence and a sense of being worthwhile are instilled. When they are consistently negative, a breakdown in the development of a positive self-image is likely. A combination of negative social mirroring along with structural discrimination and prejudice can lead to an adolescent experience marked by discouragement and frustration. An interesting finding of the longitudinal study co-directed by Suárez-Orozco is that most children were aware of the negative images others may have had of them (Suárez-Orozco, Suárez-Orozco 2001). Coping mechanisms—the ways in which youth deal with those messages—are critical in determining the consequences of these perceptions. Youth can develop an oppositional attitude toward schooling if they associate it with hostile and oppressive values; conversely, immigrant students often embrace schooling experiences if they perceive them to counter the negative social mirroring they experience elsewhere.

Falicov (2002) contends that youth who are aware of discrimination and racism may gravitate toward activism and other forms of political or social engagement focused on issues of social justice. For immigrant youth of color, in particular, such forms of activism can serve a critical protective function and become a primary determinant of whether these

youth will successfully cope with the particular demands of their social situation or fall prey to the risks that overcome many of their peers.

Michael J. Nakkula and Claudia G. Pineda

ETHNIC AND RACIAL IDENTITY DEVELOPMENT

Identity development is broadly defined as the processes by which people come to understand who they are and how they fit into society. Renowned psychologist Erik Erikson articulated a model of adolescent identity development that has heavily influenced the past forty years of research in this area (1968). According to Erikson’s clinical and ethnographic observations, adolescence is a key period during which identity is formulated in relation to past experiences, societal influences, and the individual’s expectations for themselves. Central to his formulations is the notion of identity crisis, or the processes through which adolescents grapple, and in many cases struggle, with the options laid out before them. By placing crisis at the center of identity development, Erikson introduced the notion of “risk” into studies of adolescence. That notion caught on and has been instrumental to framing adolescent development as an inherently risky endeavor. In fact, most contemporary models of adolescent development assume risk-taking behavior as normative.

For youth of color and for those of ethnic backgrounds that vary from the mainstream culture, however, adolescent development poses particular challenges. In fact, developmental researchers have begun to take great pains in capturing important differences in adolescent development, based on such factors as race, ethnicity, social class, and gender. More recent studies have shown how identity development is a multidimensional process that is influenced by these factors and others. Ethnic identity, for example, can include the influences of race and cultural practices, including the role of gender as understood from a particular ethnic perspective. In this entry, we examine the relationship between racial and ethnic identity development, risk, and resilience.

ETHNIC IDENTITY AND BICULTURALISM

The study of ethnic identity has flourished in the past two decades, but, according to the developmentalist Rosa Hernández Sheets (1999), there is still little agreement on what ethnic identity comprises. Some researchers define ethnic identity as the psychological sense of belonging to an ethnic group, based on either objective characteristics (e.g., language, food, race) or subjective ones (e.g., shared values, goals, and beliefs). Ethnic identity is different from racial identity in that the latter has usually referred to black identity in contrast to white identity. In fact, ethnic identity as a concept emerged from the void left by racial discourse that focused solely on white-black dynamics. Ethnic identity contrasts with cultural identity, which groups people based on age, social class, or common cultural beliefs and experiences, some of which can be similar across different ethnic groups.

Two trends in the conceptualization of ethnic identity warrant particular mention. A number of studies conceive of ethnic identity as defined by the labels people choose with respect to their ethnic background, which can vary from a specific national identity (such as Colombian or Vietnamese), to a pan-ethnic identity (such as Latino or Asian). From this perspective, ethnic identity is influenced by the level of the individual's assimilation or adaptation to the dominant culture and by their generational status (immigrant versus the children of immigrants). Those who identify heavily with their family's country of origin are less likely to accept pan-ethnic, compound identity descriptions such as Latino American or Asian American. Their ethnic identity tends to be more heavily nationalistic. For recent immigrants, ethnic identity is particularly complex and self-selected ethnic identity labels may vary according to particular situations. Within one's own ethnic group, country of origin might be embraced, whereas within the larger society, broader pan-ethnic labels might be selected. These choices carry important implications for defining and understanding who one is and even how one is expected to behave or interact within particular social contexts.

Another scholarly viewpoint outlines stages or phases of ethnic identity formation. Within this developmental approach, ethnic identity is composed

of two separate dimensions: the attitudes toward one's own ethnicity and the attitudes toward the dominant culture. Jean Phinney and her colleagues (Phinney 1990; 1992; 2000; Phinney and Devich-Navarro 1997) found that youth go through three stages, each derived from Erikson's model of identity formation: foreclosure, exploration, and achieved identity. The foreclosed ethnic identity has been inherited from one's family with little opportunity to explore alternatives or define the meaning of this identity for one's self. Exploration refers to the process of uncovering alternatives and progressing toward the development of an ethnic identity with which one is comfortable. And the achieved ethnic identity is defined by a committed sense of belonging to and positive feelings about one's ethnic group, as a result of having explored alternatives. This ideal developmental achievement includes what Phinney and other scholars call a bicultural identity, which refers to an ethnic identity simultaneously rooted in affiliation with one's homeland and the new country (Phinney 1990; 1992; 2000; Phinney and Devich-Navarro 1997).

Bicultural individuals are able to navigate comfortably and competently within their own ethnic group and the larger mainstream culture. Although the process of becoming genuinely bicultural entails a good deal of stress, it also helps build skills, such as the capacity to empathize with and learn from a broader range of people. The psychologist Teresa LaFromboise and her colleagues (1993) proposed a model of bicultural competence that involves cognitive (e.g., knowledge of cultural values and beliefs and a sense of efficacy within the two cultures), emotional (e.g., a strong sense of identity and an appreciation of both cultures), and behavioral (e.g., communication ability and a sense of being grounded through social networks) skills. As discussed in the resilience mechanisms entry, the development of competencies such as these serve to protect youth against the risks they may confront in other aspects of their day-to-day life.

Biculturalism counters models of acculturation and assimilation that assume successful adaptation requires immigrants to shed their original ethnic identity to acquire the attributes of the mainstream culture. Such models usually focus on the negative impact of the acculturation process, such as feelings of stress, anxiety, alienation, and not belonging to

either culture. While that may be the case for many individuals, studies consistently show that developing and maintaining bicultural competencies play an important role in psychological well being.

ETHNIC IDENTITY AND SCHOOL ENGAGEMENT

Literature on ethnic identity sheds light on the processes involved in school engagement by illuminating the relationship between students' perceptions of themselves, the cultural dynamics that influence these perceptions, and their experiences of schooling. Studies in this area have proposed theoretical models explaining the variation in academic performance among different ethnic groups. While some groups tend to fare well academically (e.g., Asian/Pacific Islander and white students), others tend to experience academic failure and be at a high risk of dropping out of in school (e.g., African American and Latino). The United States Department of Education reported that in 2000 the dropout and high school graduation rates still point to a racial/ethnic gap: white and Asian/Pacific Islander students have higher rates of graduation compared to their African American and Latino counterparts. Likewise the proportion of people between sixteen to twenty-four years of age without a high school credential was 27.8 percent for Latinos, 13.1 percent for blacks, 6.9 percent for whites, and 3.8 percent for Asian. Race and ethnicity continue to be important predictors for school performance, even after accounting for economic differences.

The cultural-ecological model proposed by John Ogbu and Herbert Simmons (1998) takes into consideration historical, economic, and cultural forces. Ogbu and Simmons found that differences in the structure of opportunity reflected in the job ceiling, whereby certain minority groups experience that economic and job privileges are not consistent with their educational credentials, have been detrimental to these groups' attitudes towards schooling. Moreover, in the specific case of African American students, who historically have received a poorer education based in part on beliefs of their "lower capacity" compared to whites, assumptions of inferiority have influenced the way they see themselves in the process of schooling. Ogbu and his colleagues found that in the face of these experiences, particu-

lar minority groups may develop an oppositional collective identity and an oppositional cultural frame of reference against the dominant group. By recognizing the enduring discriminatory situations, those groups generate mechanisms that set boundaries between whites and blacks. Unfortunately, schooling may become associated with the dominant group, generating conflictual dilemmas for minority students who could otherwise achieve at a higher level. Ogbu and his colleagues found that African American students typically create strategies to resolve the tension between being perceived as acting white and their wanting to do well in school, but these resolutions often compromise their overall school performance.

This concept of "acting white" is critical, given its implication that students' sense of connection to school can be heavily influenced by their cultural frames of reference. This finding has generated a range of responses, including some from African American and Latino scholars who argue that Ogbu has overgeneralized his findings to students of African American and Latino descent. Studies countering Ogbu's findings show that although many African American and Latino students do subscribe to the acting white phenomenon, many others do not. Accordingly, the labeling of this finding as a collective cultural frame of reference seems to be a stretch.

What has become known as the "burden of acting white" plays out differently depending on the values held by different groups and their histories of discrimination. In the case of immigrant students, their school perceptions are influenced by experiences in their country of origin, their English proficiency, and with the reception they receive in the United States. Thus, social class, skin color, race, and gender dynamics inform their ethnic identity development. Identity researcher Rubén Rumbaut (1996) asserts that for those who appear to be white, ethnic identity is an option that can be appealed to whenever it is desired. In contrast, those students who look black or Asian are not as free to choose their ethnic identity. They commonly are stuck with stereotypes placed on them by others.

In studies of school engagement and its different dimensions (readiness, attendance, effort, help-seeking behavior), how ethnic and racial minority students perceive themselves and how their immediate context, including their peers and community, value

their cultural background is crucial to how they negotiate their ethnic identity. While African American students may be caught between acting black versus acting white, Mary Waters (1999) found that others such as West African are struggling to not “act black” and not be perceived as blacks, because they understand the racial dynamic present in American schools. Yet, as other researchers point out, it is important not to overlook the intragroup differences, given that their minority status is not the only factor that informs how students experience and value school. While some students see schooling as their way of resisting discrimination and ensuring upward mobility, others resist such discrimination by not engaging in the schooling process.

ETHNIC IDENTITY VERSUS CULTURAL IDENTITY

Although it is easy to equate ethnic identity with cultural identity, there are important distinctions between these concepts and their relationship to school experiences. Ethnic identity is informed by a student’s ethnic background, including nationality, as described above. Conversely, there are cultural differences within ethnic groups in terms of social class experiences and values (middle class versus working class, for example), religious affiliation, and political orientation (traditional/conservative versus progressive/liberal). One’s cultural identity development can be strongly shaped by any combination of such factors. Further, some students feel strong affiliations with their peer culture whereas others identify more strongly with the culture of adult authority in their families, schools, and communities. The adult-youth cultural divide is nicely captured by the sociologists Min Zhou and Carl Brankston (1998) in their study of Vietnamese students who were encouraged by their parents to be successful, while at the same time being pulled by their peers in a youth culture oppositional to adult authority. Such cultural divides can lead to extreme stress and identity confusion for young people struggling to solidify a sense of self-definition.

The distinctions between ethnic, racial, and cultural identity have created different schools of thought regarding the low academic achievement of many African American and Latino students. In the one camp, researchers like Ogbu and Simmons (1998)

relate students’ experiences of racially and ethnically based discrimination and the job ceiling phenomenon to low academic achievement. They view this phenomenon as a racial and ethnic group phenomenon. Other researchers such as Laurence Steinberg (1996) have found that the more specific and local contexts of acculturation, such as the peer culture, are critical to predicting immigrant and ethnic minority students’ academic outcomes. Steinberg, Brown and Dornbusch (1996) also found that first- and second-generation immigrant students tend to decline academically the longer they are exposed to U.S. norms. The more such students become “Americanized” the less time they spend on homework, and the lower their GPA and overall academic achievement. As Steinberg argues, Americanizing into an indifferent attitude towards schooling and a stronger orientation towards social and recreational pursuits, prevalent in America, may explain many minority students’ decline (Steinberg, Brown, and Dornbusch 1996). Rather than being a particular ethnic group phenomenon, Steinberg’s findings may be viewed as an artifact of peer culture and the development of a peer-influenced American cultural identity.

In short, studies of ethnic versus cultural identity are extremely valuable to understanding school engagement and academic achievement. In particular, global attributions of academic success and failure to larger racial and ethnic group norms may shield educators from more clearly understanding how more specific cultural identity issues play a critical role as well. Further research in this area is necessary to deepen our understanding of school engagement and academic success among ethnically, racially, and culturally diverse students.

ETHNIC AND RACIAL IDENTITY AND SCHOOL PRACTICES

Literature on resilience has long recognized the importance of cultural factors in school, clinical, and counseling settings. Studies show that supporting youths’ cultural traditions within the school can translate into adaptive functioning by helping them engage more actively with the educational environment. Likewise, studies of community assets, such as the work of Peter Benson and the Search Institute described earlier, show that youth can find strength in the traditions, symbols, and values of their cultural

heritage. Studies such as these suggest that cultural competency, or knowledge of one's own cultural traditions should be promoted in youth.

Consistent with this suggestion, some approaches have adapted already existing intervention models to different cultural "sensitivities," such as finding bilingual practitioners to work with language minority students. While such practices can be effective to some extent, it is important to devise interventions that put cultural strengths at the forefront. Arts-related programs (e.g., dance, painting, martial arts) have perhaps done the best job in exploring and tapping into minority students' cultural traditions and practices. Recently, humanities scholar Doris Sommer (2005) has put forward the notion of "cultural agency" to describe how, through cultural expressions and initiatives, a sense of agency and creativity can be promoted, leading in turn to further democratic endeavors. Yet, more intervention and evaluation research is needed to find ways of drawing from cultural traditions to promote strengths in at-risk youth.

At the intersection of social and academic development, Robert Selman and his colleagues (Selman 1997; Selman, Watts, and Shultz 1997) have pioneered the use of pair counseling (pairing children of different backgrounds in a social development intervention) to explore and utilize ethnic and cultural values in the promotion of interpersonal and intercultural awareness. Two of Selman's colleagues, Michael Karcher and Michael Nakkula (1997) presented an in-depth analysis of interracial pairings to exemplify the power of the pair counseling approach to promoting intercultural understanding and cultivating interracial friendships. Interventions of this type should include parents, who may have mixed feelings about interracial and intercultural initiatives.

Schools have an important role to play in creating a context that can help parents examine their own race and culture-based beliefs. Fostering social awareness and promoting perspective-taking abilities can occur through school-based activities that involve parents. Too frequently parents in particularly stressed urban schools are called upon only when their children are in trouble. By reaching out for parent involvement in their children's prosocial, intergroup activities, teachers and school principals have an opportunity to help break down the cultural divide that exists between many home and school

environments, particularly for low-income parents with relatively little formal education. To accomplish this, however, educators themselves must examine their own biases or stereotypes that may hinder outreach to parents of different racial and ethnic backgrounds.

Prominent scholars of black identity development, such as William E. Cross, Jr. and Linda Strauss (1999), have outlined different psychological mechanisms that support African American children's adjustment and can be promoted in schools. These include filtering out or critiquing racist information to which students may be exposed through the media or other communication forums; promoting nonracist intergroup experiences; and facilitating healthy, proactive bonding among African American youth around achievement-oriented activities as a means of counteracting attitudes leading to school disengagement and skepticism. Thus an awareness of the different aspects of racial and ethnic identity development allows educators to support minority and nonminority children in developing multicultural competencies. In this sense, racial and ethnic conflict can be seen as an opportunity to help youth and adults, teachers and parents alike, develop important skills in the area of multicultural interactions.

BILINGUALISM AND BILINGUAL EDUCATION

Bilingual education has been one of the most controversial debates in the field of education, bringing into play issues from the political realm as well as the sociolinguistic. Major disagreements exist over the value of bilingualism, as well as the best way to educate language minorities to meet the same challenges posed today to mainstream children regarding standards-based assessments and high school graduation requirements. In part, bilingualism has been controversial because in the United States the idea of one language has represented national unity, and "good" English has been the measure of citizenship and democracy. The negative feelings toward bilingual education have, in the past, been supported by studies suggesting that bilingualism creates confusion and cognitive delays. More recent research has disproved these findings, and shown that they were largely based on faulty methodology. In fact, bilingualism now has been associated with cognitive

flexibility, enhanced abstract thinking, academic achievement, higher future aspirations, and better occupational opportunities.

The degree and nature of a child's bilingualism varies depending on demographic and sociocultural factors, including the level of integration within the community and the length of residence in the United States. These constitute key factors in second language acquisition and native language maintenance. While most immigrant parents urge their children to speak the language of the dominant culture, researchers point to the influence of parental socioeconomic factors on language acquisition. Parents of higher socioeconomic status can provide their children with more opportunities to gain the skills of the majority culture, while low-income parents living in extremely segregated neighborhoods will have a harder time doing the same. Accordingly, ethnic (and language) composition of the school and the children's community will be critical in helping students gain English skills and preserve their mother tongue.

Linguist Catherine Snow (Bucvalas 2002) argues that there is no critical period for second language learning; therefore, older learners can become bilingual and can actually use their primary language skills in the acquisition of their secondary language. She points out that while pushing immigrant students to learn their second language as early as possible does not do any harm, it is important to consider that younger students are more likely than their older peers to lose their first language. Thus, if the goal is true bilingualism, native language maintenance and second language acquisition are equally important. Proponents of bilingual education rely on research that shows that English fluency in reading and reasoning takes longer than a year, and that good programs need well-prepared teachers. However, if short-term immersion

programs are to be implemented, there are systematic curricula in the early school years that can benefit second language learners.

A recent study conducted by Nonie Lesaux and Linda Siegel (2003) found that after implementing a systematic reading curriculum in elementary school children in Canada, bilingual children often surpassed their monolingual counterparts. The language awareness of young second-language learners seemed to explain this finding, and clearly children in similar situations could benefit from such systematic and carefully devised interventions. Despite research supporting the benefits of bilingualism, bilingual programs have been systematically dismantled over the past several years throughout the United States. Detractors of bilingual education helped pass *Proposition 227*, an initiative aimed at terminating bilingual programs in California's public schools in 1998. Similar versions of the same bill were later passed in several other states. As a result, today many students are denied bilingual instruction, despite researchers and practitioners' agreement that good bilingual programs promote students' academic achievement and other educational outcomes.

The debates over bilingual education strike at the heart of educational reform policies for ethnic and language-minority students. Supporting the maintenance of native language skills as immigrant students learn English is a clear indication that the school system values the cultural backgrounds of its families. The resilience literature is quite definitive on this count: supporting students' cultural competencies helps build strengths that can be utilized to cope with the demands and stressors of everyday life (Masten and Reed 2002; Benson 1997).

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ACHIEVEMENT MOTIVATION

Motivation is the study of goal-directed behavior—the exploration of what propels individuals to choose some goals over others. Achievement motivation is the study of goal-directed behavior in educational settings. Researchers who study achievement motivation are interested in factors other than actual intelligence that predict the kinds of activities children choose to pursue and the persistence with which they pursue them. How is it that some children are drawn to challenging tasks, while others are content to work on problems with which they already have some familiarity? Why do some children fall apart at the first sign of difficulty, while others seemingly throw themselves into difficult problems with abandon? Why does the enthusiasm with which children start schooling deteriorate as early as the second grade? What goes on in homes where children are doing well in school that may not be going on in homes where children are doing poorly? And, how can we best understand ethnic and cultural differences in achievement?

In this chapter, we will provide an overview of theory and research that has addressed these and other related questions. We begin by providing a background on the theoretical approaches that have influenced the study of achievement motivation. We show that, over the course of the last century, theories have evolved from the general to the specific, and become much more comprehensive of the multiple factors that serve to foster or inhibit the motivation to learn. We no longer view achievement motivation as an inner need or drive that people have to a greater or lesser degree. We no longer attempt to develop mathematical formulas to predict achievement behavior. Instead, we view achievement motivation as a constellation of beliefs and behaviors, co-constructed in the multiple contexts of home, school, and community, in which culture and

ethnicity play central roles. This evolution in our understanding has been accompanied by a change in research methods. Researchers are increasingly adopting mixed methods approaches, in which they combine both quantitative (e.g., surveys) and qualitative (e.g., individual interviews) methodologies in their investigations.

Throughout this chapter, we consider the ways in which children’s achievement beliefs and behaviors develop and change over time, and examine how debilitating beliefs, such as low expectations, can be alleviated in the classroom. Overall, we show how theory and research have evolved to place culture and context at the center of investigations into the factors that foster or inhibit achievement motivation.

Janine Bempechat and Anna Mirny

EARLY GENERAL THEORIES OF MOTIVATION

Although studying goals behind actions, or “why people do what they do” is one of the basic questions of psychology, it is only over the last few decades that motivation has grown into a separate field of psychological inquiry. For the first half of the twentieth century and certainly before, studies of motivation reflected more general trends in personality theory. Theories of motivation, then, were presented in the context of general or “grand” theories of personality. The most prominent of these—psychoanalytic, field, and behaviorism—provided blueprints for later theorizing, which became increasingly specific and targeted different aspects of the relationship between achievement beliefs and behaviors.

FREUD'S PSYCHOANALYTIC THEORY

Sigmund Freud based his theory of human development on the notion that basic biological instincts drive behavior. His psychodynamic conception of development placed the need to satisfy biological urges at the center of an ongoing lifelong struggle for happiness and psychological equilibrium.

Freud incorporated concepts from the field of physics to argue that humans are born with a fixed amount of psychic energy, which he spoke of as a closed energy system. According to Freud, when individuals perceive a valued goal or object as unattainable, their psychic energy becomes dominated by the object of their desire. Accordingly, this leaves less psychic energy available for the pursuit of other, perhaps equally important goals.

Freud proposed that the struggle for happiness and psychological equilibrium exists in three mental structures. We are all born with the *id*, where our impulses and desires for instant gratification reside. The *ego* develops out of the realization that our own individual needs cannot always be met in a time and manner we dictate. Eventually, this realization leads to the formation of the *superego*, or conscience, which operates to keep a check on the desires of the *id* and the attempts of the *ego* to control socially unacceptable behavior.

Consider, for example, a low-achieving student whose parents have consistently made clear their disappointment in his school performance. He may wish or fantasize about finally being on the receiving end of praise and parental approval. His *ego* will remind him of the need to invest long and hard hours of study to attain this goal. If this route is acceptable to him, his *id* and *ego* will have achieved a balance, or homeostasis. If not, his *ego* will struggle against his *id*'s socially unacceptable solutions, such as cheating.

Freudian theory does not figure in contemporary views of achievement motivation. While we would all accept the general principle that, as a species, humans have internal and unconscious desires to achieve, these are very difficult to test. It is simply not possible to predict motivational thought or behavior from wishes or other aspects of an individual's fantasy life. However, unlike behavioral theorists, Freud, through his concept of the *ego*, placed cognition at the center of understanding individual be-

havior, a concept that is critical in contemporary theories of achievement motivation.

LEWIN'S FIELD THEORY

Field theory, as conceptualized by Kurt Lewin, is guided by the principle of contemporaneity. In the tradition of Gestalt psychologists, Lewin argued that behavior (B) is determined by properties of the person (P), as well as the person's psychological environment (E) at the time. His well-known mathematical formulation, $[B = f(P, E)]$, represented this hypothesis. While an individual's past experiences are indeed important, Lewin believed that these should be viewed as having a contemporaneous effect on the individual and her environment. As such, his theory has been described as ahistorical in nature. Lewin introduced the concept of "life space," which represented all the facts that are said to influence an individual at a given point in time. He defined the psychological environment as that which the individual perceives consciously, as well as other factors that may not be conscious at the time (Lewin 1938).

Lewin defined goal setting, or level of aspiration, as the result of two factors in the immediate environment: (1) the subjective evaluation, attractiveness, or valence of a future success or failure, and (2) the perceived probability of success or failure. Importantly, Lewin and his colleagues found that anticipated success will be perceived as a more desirable outcome as a task gets harder and harder (Lewin, Dembo, Festinger, and Sears 1944). By the same token, the anticipation of failure is more debilitating if the task is perceived as having been easy. According to Lewin, an individual will set a goal in an achievement situation by weighing the valence of success and failure against the probability of success and failure. In particular, he argued that valence is determined by characteristics of the task, as well as personality variables, such as the motives to "seek success" or "avoid failure."

Lewin's notion of valence was very influential in the development of contemporary expectancy-value models of achievement motivation. Further, his emphasis on seeing the individual and the environment as inextricably connected is being renewed in current theorizing, which is placing increased attention on the social and cultural contexts of achievement motivation.

BEHAVIORISM

Unlike psychoanalytic and Gestalt approaches that emphasized internal processes and psychological representations of behavior, behavior theories are focused on actions that are observable. Behaviorists were greatly influenced by Darwinian theory, and focused on studying the functional significance of human actions. Behaviorists studied and observed human and animal behavior in laboratory settings, since they assumed that the laws governing animal behavior could be often extended to humans.

As conceptualized by the concept of drive, Alfred Hull proposed that humans are driven to quell internal needs that result from deprivation—lack of food, water, or rest (Hull 1943). The organism's goal is to maintain homeostasis, a state of optimal balance between our body's mechanisms. Hull differentiated between primary and secondary drives. The basic need for food, water, and rest, for example, are instincts which Hull considered primary drives, all of which propel individuals toward behavior that will satisfy their needs. When we are hungry, for example, we are driven to find food to satisfy our need for sustenance.

Clearly, however, much of human behavior is not driven by instinctual needs for food or water. Hull proposed the notion of secondary drives to account for behavior that is learned, such as our responses to fear or anxiety. The link between the stimulus (seeing a dangerous animal) and the response (running away) is known as habit strength. According to Hull's formulation, B (Behavior) = D (Drive) \times H (Habit), behavior is determined by both internal need and the habitual response to this need. The habit was usually seen as a mechanistic way in which behavior was learned. However, other behaviorists, such as Edward Tolman, noted that learning is a cognitive process, and that even animals learn to expect a reward (or punishment) when they behave a certain way in a given situation (Tolman 1932). The more often the behavior leads to need satisfaction, the stronger is the habit strength of that behavior. The dependency of habit strength on the previous positive outcomes is known as Thorndike's Law of Effect (1931).

The stimulus-response association came to have important implications in the classroom. B. F. Skinner had shown in experiments with laboratory ani-

mals that positive reinforcement increases the occurrence of wanted behaviors, while negative reinforcement decreases the occurrence of undesirable behaviors (Skinner 1953). Teachers would be able to use these same principles to foster behavior conducive to learning (e.g., point systems) and inhibit behavior that interfered with learning (e.g., punishment systems such as loss of free or play time). Further, these principles could be adapted whether working with children individually or in groups (Skinner 1968).

While drive theories had the advantage of focusing on observed behavior, little or no consideration was given to cognition. In current theories of motivation, which place greater emphasis on the role of meaning-making, behavioral constructs such as habit strength and drive are no longer considered in understanding achievement behavior. Instead, researchers are focused on the interpretation that individuals bring to achievement situations.

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MID-CENTURY THEORETICAL ADVANCES

By the middle of the century, theoretical work in achievement motivation focused increasingly on the relationship between cognition and behavior. Julian Rotter, Robert White, Henry Murray, and John W. Atkinson provided the foundation upon which a more sophisticated understanding of achievement motivation grew.

SOCIAL LEARNING THEORY

Social Learning Theory, as proposed by Julian Rotter (1954), integrated aspects of behaviorism and field theory. He suggested that behavior is learned in social situations, but that cognition is a key component of motivation (Rotter 1954). Like theorists before him, Rotter expressed his theory in mathematical terms, and proposed a formula for predicting achievement behavior. He argued that, in a given situation, behavior is a function of the expectancy that there will be reinforcement for that behavior, and

the value the individual places on this reinforcement. Rotter's theory conceives of individuals as developing expectations for success or failure based on previous experiences with similar tasks, and behaving accordingly and with respect to how much they value the expected outcome. For example, a student may decide to endure a difficult elimination process to compete for a spot on her school's math team if she expects that she will receive praise from her parents, and values this parental praise.

Rotter's conceptualization of internal versus external control of reinforcement, or locus of control, represented a major advance in the field. Rotter's interest in this construct grew out of his observations that changes in expectancies after reinforcements seemed to vary systematically, both as a function of the situation and the characteristics of the individual. He argued that people differ in their tendency to see events as under their personal control (internal locus of control) or under control of the external circumstances which are unpredictable (external locus of control), such as luck or the influence of powerful others (Rotter 1966). The application of this construct to achievement situations is clear. The extent to which students perceive school outcomes to be controllable influences their expectancies for success or failure. A student who believes his high grades are the result of hard work and careful preparation (controllable factors) will expect similar success in the future. In contrast, a student who perceives that his poor performance is the result of a teacher's vendetta will expect continued failure. More specifically, locus of control influences actual learning, motivation, and achievement behavior. Students with internal locus of control tend to try harder and persist more in the face of difficulty than those who believe they have little control over their achievement outcomes. These engaged learning behaviors tend to result in higher achievement. The concept of locus of control has been incorporated and extended in the work of several theorists, including Bernard Weiner, whose Attribution Theory is described further on.

EFFECTANCE MOTIVATION

In a related advance for the field of achievement motivation, Robert White noted that the exploratory

behaviors that are regularly observed in animals and humans cannot be adequately explained by instinct or drive theories. According to White, persistent behaviors, such as those involved in learning to walk, represented a new kind of motivation—effectance motivation (White 1959). In essence, we are motivated by an inherent need to master and influence our environment. Effectance motivation in infants and toddlers was seen as being rather global and focused on objects in their immediate surroundings (such as grabbing and examining a colorful stuffed animal). White suggested that as children grow, effectance motivation becomes targeted at mastering increasingly complex tasks, such as those required in a classroom or athletic field. White's theory provided a crucial basis on which theories of intrinsic and mastery motivation have been subsequently developed. This work greatly influenced the theories of Susan Harter, Edward Deci, and Richard Ryan, discussed in a later entry.

ATKINSON'S EXPECTANCY-VALUE MODEL

John W. Atkinson was greatly influenced by Henry Murray's Need for Achievement Theory (Atkinson 1957). Murray proposed that individuals possess a number of basic human needs, such as the need for affiliation, the need for power, and the need for achievement. Murray defined the need for achievement, in part, as a need to accomplish difficult tasks well, and in the process, gain a sense of self-esteem. One major contribution of Murray's work was his development of an assessment technique—the Thematic Apperception Test (TAT)—that measured the extent to which need for achievement played a major role in individuals' ideation. The TAT consists of a series of cards, on which are depicted various scenes which are purposely ambiguous. One picture, for example, depicts two women, one younger and one clearly older, in lab coats in a laboratory setting. Respondents are asked to compose a story, at least fifty words in length, describing what is transpiring in the scene. These stories are then coded or scored for their level of achievement-related ideas, and related to achievement variables, such as school outcomes or persistence.

Early in his work, Atkinson's model was referred to as a "risk-taking" model because it considered the

probability that an individual would weigh the probability of success or failure against his estimate of the relative difficulty of the task (Atkinson 1964). In this regard, Atkinson integrated Murray's theory with the work of Edward Tolman (1932), whose notion of expectancy for success evolved from his studies of maze learning among rats, and Lewin's views of valence (the attractiveness of a goal) and level of aspiration. Atkinson noted that motivational tendencies are aroused whenever success or failure is an issue. While task difficulty is situationally determined, Atkinson argued that the strength of the motive to achieve or to avoid failure is rooted in individual personality.

According to Atkinson, the immediate environment presents what he termed instigating or inhibitory influences that serve to arouse an individual's tendency to approach or avoid a task. If an activity is interesting, or is rewarded, it will become the instigating force in behavior. In contrast, if the individual has a negative history with the activity, or has been punished for engaging in it, it will become the inhibitory force, and increase the individual's desire not to engage in the activity.

Atkinson's distinction between the tendency to approach or avoid achievement-related goals (T_s) was an important advance for the field. His formula for predicting behavior proposed that achievement behavior is a multiplicative product of the need for achievement, or the motive for success (M_s), the probability that one will meet with success (P_s), and the incentive value (I_s) that the success has for the individual. Affect figured prominently in Atkinson's theory. Specifically, he argued that success leads to feelings of pride in one's accomplishment, especially if the task is a difficult one. As we will see further on, affect came to hold an increasingly prominent place in achievement motivation theories.

Inasmuch as individuals come to anticipate positive affect for tasks with which they have experienced success and resulting feelings of pride, Atkinson argued that they also come to anticipate negative feelings from tasks with which they have experienced failure and the shame that ensues. Parallel to expectancies for success, Atkinson suggested that fear of failure would result in the tendency to avoid failure (T_{AF}). He proposed that this tendency (T_{AF}) was the multiplicative product of the need or

motive to avoid failure (M_{AF}), the probability that failure would occur (P_f) and the incentive value of failure (I_f)—shame.

Overall, Atkinson proposed that the tendency to either approach or avoid an achievement-related task was equivalent to the tendency to approach a task minus the tendency to avoid it, or $T_A = T_s - T_{AF}$. In order to account for the fact that individuals seek achievement-related tasks for reasons that may have little to do with fulfilling a need (such as a desire for external reward), Atkinson proposed ultimately that achievement behavior is the result of the tendency to approach a task plus extrinsic motivation (Achievement Behavior = $T_A + \text{Extrinsic Motivation}$). While he used the TAT to measure need for achievement, or what he called the Hope of Success, he assumed that the tendency to avoid failure, or Fear of Failure, was a separate motive that tapped into anxiety. Thus, he used the Test Anxiety Questionnaire (TAQ) to measure its strength.

Atkinson's theory suggested that individuals with relatively stronger motive for success than motive to avoid failure would be attracted to tasks that were neither too easy nor too difficult; in other words, optimally challenging tasks. In contrast, individuals with a stronger motive to avoid failure than motive for success would prefer tasks that were too easy or too hard. As has been summarized elsewhere, outcomes on these kinds of tasks tended to support Atkinson's theory, but their applicability in naturalistic classroom settings was not as clear (Pintrich and Schunk 2002). Research moved forward in ways that would consider classroom learning more directly.

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CONTEMPORARY THEORIES OF ACHIEVEMENT MOTIVATION

The study of achievement motivation has advanced considerably from its early focus on needs and drives to the introduction of cognition and affect into theory and research. Over the past forty years in particular, our understanding of the motivational factors underlying students' achievement behavior has deep-

ened considerably. This is largely due to the integration of social cognition with principles of achievement motivation theory. Social cognition recognizes the mutual relationship between the environment and the interpretation individuals bring to bear on their interactions in their environment. In other words, our social context influences our understanding of events, which then come to influence our interactions with our environment.

For researchers in achievement motivation, this has meant an increased attention to the complex constellation of beliefs, attitudes, and emotions that guide the interpretation of achievement experiences. In building on earlier work, contemporary theorists have shed the mathematical formulations that sought to predict achievement behavior and focused on different aspects of the meaning-making process. The result is a more detailed and context-specific understanding of why students are oriented toward some goals and not others, how they come to judge their abilities, and the circumstances under which they will initiate learning, show persistence over time, maintain their interest, and renew their efforts in the face of discouragement.

Researchers who have examined advances over the past few decades have found that it useful to conceptualize the various avenues of inquiry as three primary questions, and we follow this conceptualization here as well (see J. S. Eccles, Wigfield, and Schiefele 1998). The question, “Can I do this task?” is one in which issues of ability are salient. The question, “Do I want to do this task?” is specific to the value that students place on a given task and the interest they show in the activity. Finally, the question, “What do I have to do to succeed at this task?” is being addressed by researchers interested in how children come to monitor and regulate their learning experiences

CAN I DO THIS TASK?

Research on attribution theory, self-concepts of ability, goal theory, and self-efficacy beliefs are all focused on the ways in which students judge their abilities to perform a task.

Attribution Theory

Bernard Weiner’s Attribution Theory was a major advance in our understanding of achievement be-

liefs and behaviors. Weiner was greatly influenced by Rotter’s Social Learning Theory, and in particular, his construct of locus of control (Weiner 1992). Weiner’s research into the attributions, or reasons, that people bring to bear in understanding their performance outcomes served to refine Rotter’s general constructs of “internal” and “external” locus.

According to Weiner, individuals are motivated to answer the questions: Why did I fail? Why did I succeed? Why didn’t I do better than I expected? In pursuit of answers, Weiner has proposed that individuals engage in an implicit analysis of the reason(s) for their performance outcomes. Taking into consideration antecedent conditions, such as previous test grades and teacher feedback, children as young as five years of age tend to attribute success or failure, broadly speaking, to effort (or lack of it), ability (or lack of it), and external factors, such as luck or task difficulty. These attributions vary along three causal dimensions—locus (internal or external), controllability, and stability. According to Weiner, effort is perceived as internal, controllable, and unstable. Ability is perceived as internal, uncontrollable, and stable. Finally, factors such as luck or task difficulty are perceived as external, uncontrollable, and unstable. Further, each attribution is linked with a specific emotional reaction, and it is the emotional reaction that predicts achievement behavior.

For example, suppose Jonathon believes that he failed his math test because he is simply bad at math, something he feels cannot change and over which he feels he has no control. This belief will likely result in his feeling ashamed, which may lead him to avoid preparing adequately for the next test. Suppose, however, that Jonathon were to attribute his poor performance to lack of effort. Knowing that he would have done better if he had studied harder is likely to make him feel embarrassed. His embarrassment will most likely lead him to prepare earlier and more effectively for the next test.

Importantly, Weiner has demonstrated that children as young as five years of age are able to infer casual attributions from a teacher’s emotions, and vice versa. When read scenarios depicting a teacher’s anger at a student’s poor grade, children infer that the teacher attributes the pupil’s grade to lack of effort. In contrast, if the teacher is said to pity a stu-

dent who performed poorly, children will infer that the teacher attributes the low grade to lack of ability (Weiner et al. 1982).

Similarly, when presented with a teacher's attribution, even young children correctly infer the teacher's emotions. For example, when told that a teacher believes a student has not tried hard enough, children predict that the teacher will be angry with the student. When told that a teacher believes a student lacks the ability to learn, children infer that the teacher will feel pity for the student in question. These findings hold for elementary, high school, and college students.

These findings have important implications for teaching practices. For example, it is natural for many teachers to want to spare children the public awkwardness that comes with not knowing the answer to a question. Some teachers react by quickly moving on to the next pupil, or by providing unsolicited help. According to Weiner's theory, such well-intentioned acts on the part of the teacher may serve to signal a belief that the child lacks ability, something over which they have no control. If these kinds of reactions become a pattern, the unintended consequence may be student self-doubt and loss of confidence.

The relationship between attributions for success and failure and academic achievement has been examined largely through surveys. In studies of elementary, high school, and college students, research has shown that higher-achieving students tend to attribute success to ability, and to reject the notion that poor performance results from lack of ability. In contrast, lower-achieving students are more likely to attribute failure to lack of ability or to external causes, such as task difficulty. This tendency places lower-achieving students at greater risk for school failure, in that it indicates the likely belief that they have no control over and cannot change their intelligence (Weiner 1994). As a result, they may be much less likely than their higher-achieving peers to see the value in renewed effort.

Do higher-achieving students develop attributions to ability? Or do attributions to ability foster higher achievement? Correlational studies do not allow any firm conclusion. However, it seems likely that aspects of both come into play in the development of children's understanding of their success and failure experiences.

Goal Theory

Goal theorists, such as John Nicholls (1978), Carol Dweck (1999), and Martin Covington (1984), have focused less on the logical analysis of behavior and more on the goals that individuals pursue in achievement situations. Nicholls and Dweck have argued that the prime motivator of achievement behavior is the desire to demonstrate high ability, or at the least, avoid negative evaluations of ability. Similarly, Covington has proposed the more ego-defensive notion that individuals are motivated by the desire to maintain their sense of self-worth. One of the more interesting lines of research within this theoretical framework examines students' perceptions of the inherent relationship between effort and ability, which is discussed further on.

Nicholls: Task versus Ego Involvement According to Nicholls, children's implicit conceptions of ability are the key to understanding achievement motivation. He found that young children (5–6 years old) tend to hold a view of ability that is undifferentiated, in the sense that they view their ability from a subjective, self-referenced perspective. In other words, they view ability as mastery, and endorse statements such as, "The harder I try, the smarter I get." By the end of first grade and the beginning of second grade, however, many children's views evolve, and they begin to adopt a view of ability that is differentiated. That is, they increasingly define ability objectively, using the performance of others as a reference point. The notion of ability as capacity takes hold, and they begin to endorse statements such as "The harder I have to try, the dumber I must be" (Nicholls 1978).

The development of children's views of the relationship between effort and ability is clearly influenced by the gradual increase of social comparison in the classroom. It is in the second grade when many children have their first experiences with tests and report cards, and as Joseph Veroff has noted, the tendency to compare one's performance to that of others is, to a certain extent, a natural aspect of the self (Veroff 1969). No teacher can reasonably expect that children not focus on the performance of others. There are ways to structure learning, however, that tend to minimize the saliency of social comparison.

Nicholls argued that when classrooms are oriented

toward fostering task involvement—a state in which students are concerned with demonstrating to themselves that they have high ability—students become focused on the process of learning, mastery becomes an end in itself, and learning is intrinsic. In contrast, when classrooms are oriented around ego involvement—a state in which students are concerned about demonstrating to others that they have high rather than low ability—students become focused on the products or outcomes of learning, and learning becomes a means to an end and extrinsic in nature (Nicholls 1989). Not surprisingly, the competitive nature of much of classroom learning tends to foster ego involvement.

In a series of investigations, Nicholls demonstrated that ego involvement fosters work avoidance, a belief that success depends on being smarter than others, and a preoccupation with the need to outperform one's peers. Under these circumstances, students tend to opt for tasks that are either too easy (thus ensuring success) or too hard (thus enabling the student to save face), especially if they have low confidence. Task involvement, though, fosters the belief that success depends on interest, effort, and persistence. Under these circumstances, students tend to prefer realistic challenge, a choice that is most conducive to learning. Regardless of perceived confidence, students operating in a task-involved setting tend to view requests for help as a way of learning.

Recall that, according to attribution theory, ability is perceived as relatively innate—internal, stable, and uncontrollable. Interestingly, Nicholls has shown that, in task-involved settings, students are more likely to view ability as malleable and controllable. Perceptions of ability, then, are not necessarily fixed traits, but rather subject to modification in different situations.

Dweck: *Implicit Theories of Intelligence* In early research on children's performance in achievement situations, Dweck suggested that children's differential reactions to difficulty might, in fact, be explained by these different implicit theories of intelligence (Diner and Dweck 1978). In a pattern indicative of learned helplessness, Dweck found that, despite experiences with prior success, some children interpreted errors as indicative of lack of ability and predictive of future failure. They made attributions to lack of ability, engaged in ineffective learning strat-

egies, such as perseveration, and displayed negative affect. In addition, children characterized by learned helplessness underestimated their previous successes and overestimated their failures.

In contrast, children characterized by a mastery-oriented, problem-solving approach intensified their efforts in the face of difficulty, did not perceive that their mistakes were indicative of low ability, engaged in effective strategies for improvement, such as self-monitoring, displayed positive affect, and were optimistic about future success on similar problems.

Paralleling Nicholls's constructs, Dweck proposed that children adhere to one of two conceptions of ability. The first, Entity Theory, suggests a view in which intelligence is perceived as a fixed trait than can be evaluated by others as adequate or inadequate. The goal of entity theorists is to display competence, and avoid displaying incompetence. The theory proposes that, when given the choice, entity theorists will opt to complete a task that they know how to do (performance goal), and display learned helplessness if they encounter difficulty. If their confidence is high, they will choose a novel task (learning goal) and display mastery-oriented behavior. The second conception of ability, Incremental Theory, suggests instead the view that intelligence is a dynamic quality of the self that grows as one continues to acquire skills and knowledge (Dweck and Bempechat 1983). Regardless of confidence level, the theory predicts that incremental theorists will opt for learning over performance goals, and display mastery-oriented behavior in the face of difficulty or challenge.

Subsequent research has shown that children's implicit theories of intelligence predict their goals, with entity theorists preferring performance and incremental theorists preferring learning goals. While entity theorists describe an intelligent peer in terms of static traits ("She's smart because she has a big brain."), incremental theorists describe intelligence in terms of the dynamic actions an individual takes ("He's smart because he tries hard.") (Bempechat, London, and Dweck 1991). Entity theorists are more likely to attribute failure to lack of ability, while incremental theorists attribute failure to lack of effort.

More recently, Judith Harackiewicz found evidence that a performance goal orientation is better conceptualized as two distinct notions: performance-approach and performance-avoid (Elliot and Harackiewicz 1996). The reader will recall that

Atkinson made this distinction between approach and avoidance goals in his theory of need for achievement, discussed earlier. In an experimental study, Elliott and Harackiewicz (1996) manipulated puzzle instructions, telling students in the “approach” instruction that their participation would give them the chance to show they had good puzzle-solving skills. Those in the “avoid” instruction were told that their performance would give them a chance to show they did not possess poor puzzle-solving skills. Students in the mastery instruction were told simply that their performance would demonstrate their level of mastery.

Results showed that students in the performance-avoid condition exerted as much effort, valued their self-perception of competence as much, and performed as well as their peers in the performance-approach and mastery conditions. However, they enjoyed the activity less, were less task involved, and displayed less subsequent intrinsic interest in the puzzles. In short, performance goals per se do not undermine intrinsic interest. Rather, performance goals oriented around avoiding the display of incompetence serve to depress interest and enjoyment.

Covington: Self-Worth Theory According to Covington, individuals are motivated by the desire to appear competent, or avoid appearing incompetent. For students, this goal means that their highest priority is to maintain their sense of ability, even if they must sacrifice opportunities to learn in the process. Covington believes that school failure is not indicative of a lack of motivation to achieve. He has argued that passivity is as motivated a behavior as active engagement. According to Covington, an underachieving student is indeed motivated, but this motivation is channeled into protecting his sense of self-worth (Covington 1992).

Covington has argued that, given the competitive nature of classroom learning, where the highest rewards are limited and few, students' sense of self-worth comes to depend on their ability to attain the few rewards that are available. In other words, in school as in society, people's sense of self-worth is tied to their ability to achieve, and conceptions of ability become increasingly salient as children progress through the educational system. Self-worth theory has proved very helpful in understanding achievement behavior that, on the surface, is par-

ticularly vexing to both teachers and parents. Why would a student who clearly has the ability to achieve refuse to complete homework assignments? What sense can it possibly make for a student, who should know better, to take a test for which she has not studied? And why would any student knowingly take on a task that is far too ambitious and cannot possibly be seen to successful completion?

In fact, for students who have low confidence or otherwise feel insecure about their abilities, these and other strategies provide a means by which they can preserve their sense of self-worth. Simply put, many students may not be able to justify placing their self-worth at risk in an effort to try to succeed. Instead, it may make more sense to try to avoid failure. In this context, Covington has argued that school learning involves a “profound conflict of values” between effort and ability, in the sense that while effort increases the probability of success, its mere exercise is an implicit condemnation of ability. In a well-known study, Covington asked college students to report the extent to which they would feel shame and incompetence after experiencing failure under four conditions: low effort, with no excuse; low effort, but with an excuse; high effort, with an excuse; and high effort, with no excuse (Covington and Omelich 1979). Students reported feeling the most shame and incompetence in the high effort, no excuse condition. They reported feeling the least shame and incompetence in the low effort-excuse condition. For many students, effort is indeed a “double-edged sword.”

The conflict that between the importance of effort and the need to protect self-worth is played out in a repertoire of self-protective strategies intended to avoid negative evaluations of ability. In a classroom, for example, students can work to minimize active participation in discussions or question and answer sessions. Students can also engage in what Covington calls “self-handicapping” behaviors, approaches designed to guarantee failure, but under the guise of socially acceptable excuses. Students who procrastinate can claim that they simply did not have enough time to complete the work satisfactorily. Those who are perfectionists find they run out of time, not because of poor organization, but because their standard for acceptable work is simply too high ever to be reached. Some students consistently set goals that are unattainable. When they fail, they do so “with honor,” in the sense that they can be per-

ceived as having tried hard under difficult circumstances. Finally, there are students who purposefully underachieve. They actively refuse to do any work or study for any exam, under the pretense that they do not want to conform to other people's rules and expectations.

At the end of the day, so to speak, Covington argues that students who engage in these self-protective strategies are far from conflict free. Indeed, their underlying concern about their ability to achieve endures. In this sense, these students' strategies for avoiding failure may protect their sense of self-worth in the short run, but in the long run they will have failed, both to learn and to develop adaptive means of coping with achievement-related anxiety. In fact, students need not be so consumed with avoiding the possibility of failure. Covington has argued that a re-thinking of classroom structure and learning can alleviate the anxieties experienced by many students. Cooperative settings, in which issues of ability are less salient, can make a positive difference for many students.

DO I WANT TO DO THIS TASK?

Children's interest in and value they place on performing a given task are at the center of Expectancy-Value theory, intrinsic interest, and research on self-determination.

Expectancy-Value Theory

The Expectancy-Value theory of achievement motivation argues that achievement beliefs and behaviors are determined jointly by the expectancy one has for success and the value one places on succeeding. The theory has its roots in Atkinson's (1957) early research, in which he suggested that, in achievement situations, individuals anticipate that their performance on a given task will result in success or failure. According to Atkinson, the value of a given task is determined by its attractiveness to the individual.

Over the past twenty-five years, our understanding of both the components and development of expectancy beliefs and task value has grown considerably, largely due to the research program of Jacquelynne Eccles, Allan Wigfield, and their colleagues (see (Wigfield and Eccles 2002). Their model,

first presented in 1983, proposed that children's achievement-related choices, performance, and persistence are influenced most directly by their expectations for success and the subjective value that they place on a given task (Eccles et al. 1983). Expectations are said to be influenced by children's goals and self-schemata, including their self-perceptions of ability. In this model, the value that children place on a task is influenced by their affective memories of experiences with similar tasks, as well as their goals and self-schemata. The latter are said to be influenced by their own attributions for success and failure, the achievement beliefs, expectancies, and values of their parents and teachers, and gender-role stereotypes. All of these components are proposed to be influenced, at a very broad level, by the cultural context in which children live, their parents' overall socialization beliefs and practices, and the differing aptitudes they bring to a given task.

Over two decades of research, and largely through questionnaire studies, Eccles and Wigfield and their colleagues have charted the development of and changes in self-perceptions of competence, expectancies for success, and achievement task values in elementary, middle, and secondary school students. For example, in a study of fifth through twelfth graders, Eccles and Wigfield focused specifically on students' subjective task value (Eccles and Wigfield 1995). They found that at all ages, students distinguish between three aspects of subjective task value, all of which are positively correlated—interest in the task, perceived importance of the task, and the perceived utility of the task. The students also distinguished between the components of task value and their self-perceptions of ability and judgments of task difficulty. Importantly, they demonstrated that self-perceptions of ability and task value are positively related to one another, but negatively related to judgments of task difficulty. In other words, students value a task if they perceive they are good at it. They are less likely to perceive they are good at it if they have difficulty doing it, and they tend to devalue its importance if they think it is a difficult task.

In both correlational and longitudinal research, Eccles and Wigfield and their colleagues have found that self-perceptions of competence and expectancies for success decline as children grow. For example, Wigfield studied changes in self-perceptions of competence and general self-esteem in the tran-

sition to junior high (Wigfield et al. 1991). He documented a decline from the sixth to the seventh grade in self-concepts of competence and liking in the four domains on which he focused (math, English, social activities, and sports). By the seventh grade, self-concepts in sports and social activities rose, while self-concepts in math and English did not. Students' liking of English and social activities, but not math and sports, rose in the seventh grade. Finally, Wigfield found that students' general self-esteem took a temporary dip immediately after the transition to seventh grade, but rose again, indicating a recovery of sorts from the difficult adjustment period from elementary to junior high school.

Why would students' self-perceptions of ability in math and English decline during this transition period? Eccles and her colleagues have proposed that the major structural differences that distinguish elementary from junior high school are likely responsible. When students go from contained classrooms to multiple teachers, they report less warmth in their relationships with their teachers. In addition, teachers report feeling less effective in junior high than in the elementary school setting. And, in the context of the previous discussion of goal theory, students are subjected to stricter evaluations in their junior high classrooms, where issues of ability become even more salient and social comparison more apparent.

More recent work on the Expectancy-Value model has focused on the relationship between self-perceptions of competence and the components of subjective task value. In other words, how are competence beliefs associated with perceptions of a domain's usefulness, importance, and interest? In a longitudinal study of elementary school students, Wigfield and Eccles examined these relationships in four domains—English, math, instrumental music, and sports (Wigfield et al. 1997). Over time, children's perceptions of the usefulness and importance of these domains decreased. Of the four domains, students rated reading and math as the most important. Across the domains, however, self-perceptions of competence were associated more with intrinsic interest and less with the perceived usefulness of the domain, a finding also reported by Eccles and Wigfield (Eccles and Wigfield 1995). These researchers also found that a stronger relationship between beliefs about math competence and perceived

importance than between math competence and perceived usefulness.

Naturally, many researchers are interested in the relation between children's achievement beliefs and their achievement behaviors, including the tasks they choose to pursue, the persistence they display in their work, and their actual grades or achievement outcomes. In early longitudinal research, Eccles reported that self-perceptions of math and English ability predicted grades, over and above what was predicted by previous grades (Wigfield 1994). In a large sample of fifth through twelfth graders, expectancies for success were better predictors of students' grades than their subjective task values. Further, the extent to which they valued math predicted their intention to enroll in subsequent math courses more than their expectancies for success. Among eighth through tenth graders, valuing math predicted actual course enrollment in advanced math courses in junior high school.

Taken together, the accumulated findings emanating from research on Expectancy-Value theory provide compelling evidence that children's expectations for success and the value they place on succeeding play a critical role in the development of their achievement beliefs and behaviors.

Bandura's Self-Efficacy Theory

Expectations play a critical role as well in Albert Bandura's self-efficacy theory. Grounded in the principles of social learning theory, self-efficacy is the "core belief that one has the power to produce desired effects" (Bandura and Locke 2003, 87). By the early 1980s, Bandura had become interested in the processes that mediate an individual's knowledge of a task and the action needed to execute the task (Bandura 1982). He noted that individuals may not do well, even though they may know exactly what to do. He argued that this gap between knowledge and action was mediated by self-referent thoughts—the judgments people make about their experiences and their thought processes. According to Bandura, self-efficacy involves integrating cognitive, social, and behavioral skills in order to judge one's capability to accomplish a task. In keeping with social learning theory, self-efficacy theory views the individual as an active participant, not a passive observer of events. In other words, as Bandura proposed, individuals set future goals, make plans to meet these goals, antici-

pate possible outcomes, and engage in self-evaluation throughout the process (Bandura 1991).

In general, self-efficacy is influenced by individual qualities, such as ability, previous academic experiences, and social support for learning. As students begin to engage in a task, they are influenced by personal factors (their goals), as well as situational factors (the difficulty of the task). Both provide valuable information that allows students to evaluate their progress. If they judge that they are making good progress, then their self-efficacy will increase. Importantly, failure does not necessarily result in lowered self-efficacy. Dale Schunk has shown that as long as students believe that they can improve their performance by adjusting their learning strategy, self-efficacy will not diminish (Schunk 1995).

Bandura identified two important components of expectations. "Outcome expectations" refer to the fact that people regularly anticipate possible outcomes of different actions and behave in ways that maximize the chance that they will attain the desired outcome. Efficacy expectations are people's evaluations of whether they have the ability to perform the task in question. Self-efficacy beliefs influence whether individuals will think about tasks in a positive, self-enhancing manner or in a negative self-defeating way.

According to Bandura's model, it is most optimal for people to have self-efficacy and high outcome expectations. Under these circumstances, individuals are more likely to feel confident, apply themselves, and be persistent in the face of difficulty. It is least helpful to have low self-efficacy and low outcome expectations. Individuals with poor perception of their ability to be successful, coupled with low expectations for success, are likely to be at risk for learned helplessness. Equally, if not more disconcerting, are those who have low self-efficacy, but high outcome expectations. Students who have little faith in their ability to manage a learning situation but hold themselves to high standards place themselves at risk for depression. It is of course possible to have high self-efficacy, but low outcome expectations. A student who studies hard but expects a mediocre grade may become increasingly frustrated with external influences, such as a teacher's grading practices.

A great deal of research has shown that self-efficacy beliefs predict goal choices, the level of effort

one expends, and the strength of persistence at the task. Simply put, individuals high in self-efficacy choose more challenging tasks, try harder, and persist longer. For example, in a questionnaire study, seventh graders responded to questions about their motivation (including questions about their self-efficacy beliefs), their cognitive strategies (e.g., study techniques, rehearsal strategies), and their meta-cognitive strategies (such as planning), and their effort on tasks (Pintrich and DeGroot 1990). Results showed that self-efficacy was positively correlated with cognitive engagement and performance. Specifically, relative to students with low self-efficacy, those with high self-efficacy were more likely to use cognitive strategies in learning, engage in more self-regulation, report persisting more at boring tasks, and had higher grades. This pattern was unrelated to prior achievement, intrinsic interest, or test anxiety.

While self-efficacy was unrelated to performance, cognitive strategies were related to grades. This suggests that teaching cognitive strategies may improve achievement, but that enhancing self-efficacy beliefs may lead to more cognitive engagement in self-monitoring and strategizing, which in turn, will foster higher achievement.

Theories of Intrinsic Motivation

Why are individuals motivated to seek out challenging and intellectually stimulating tasks? This fundamental question about intrinsic motivation has been the source of theory, research, and debate. Attempts to address this query are made even more compelling by considerable evidence that children's early enthusiasm and intrinsic interest in learning declines considerably, as early as the third grade. What is it about the structure of formal schooling that might contribute to this disturbing trend? Recall White's (1959) early suggestion that individuals have a basic need to feel competent. This idea has been refined over the past two decades to include the notion that individuals also need to feel autonomous and have some measure of control in their educational experiences in order to maintain an intrinsic interest in their learning. Not surprisingly, a good deal of research has focused on the nature of rewards in the classroom, under the assumption that their use may deprive students of a sense of control over their learning.

Susan Harter's model of Mastery Motivation represents the first refinement of White's work, in the sense that she examines antecedents and consequences between mastery attempts in the context of success and failure experiences. Importantly, she has argued the need to examine these relationships separately for different domains of the self (academic, athletic, etc.) (Harter 1978). In keeping with holistically grounded approaches to studying motivation, Harter's model includes factors in the learning context that are influential, including reinforcement from socializing agents (parents and teachers) and reward systems. In particular, the model proposes that mastery attempts that are met with success and are positively reinforced will result in internalization and foster a sense of self-competence. This will serve to foster enjoyment and intrinsic interest, which will then enhance effectance motivation. Further, over time, the need for external approval will diminish. In contrast, if students experience failure, and parents react to their disappointing performance with a lack of reinforcement or with disapproval, this will serve to increase anxiety, lower perceptions of competence, and increase dependence on external approval. All of these outcomes will likely lead to a decrease in mastery motivation.

Richard deCharms focused on personal causation as a means to examine intrinsic motivation, arguing that individuals who feel that they can control their outcomes will take more initiative and display sustained interest in their learning (deCharms 1984). He used the terms "origins" and "pawns" to describe the difference between students who feel that they can have an impact on their environment (origins) and those who feel that they cannot (pawns). DeCharms proposed that a sense of personal causation will lead origins to believe that their learning behavior and outcomes are under their control, thus fostering a strong sense of responsibility, intrinsic interest in learning, and a commitment to activities that they value. In contrast, pawns are seen as perceiving that their learning behavior and outcomes are under the control of others, leading to feelings of helplessness, task avoidance, and diminished interest in learning.

DeCharms engaged in naturalistic intervention in order to test his theory of personal causation. He conducted a longitudinal investigation in which he trained teachers to foster origin beliefs and behav-

iors in their students and classrooms. This training focused on enhancing students' self-concepts, sense of responsibility, intrinsic motivation, and personal responsibility. Student choice in tasks and goal setting were key ingredients in origin training, but did not imply a laissez-faire classroom climate. Teachers provided a firm structure in which they determined the range of choices available to students. When deCharms compared the achievement beliefs and behaviors of students in origin training and control classrooms (no origin training), he found that the origin-trained students set their own goals, were more realistic in their goal setting, determined their own instrumental activities, took more personal responsibility for their actions, were more self-confident, and had higher academic outcomes. These findings were sustained over time, providing evidence that a sense of personal causation can indeed foster adaptive learning beliefs and behaviors.

Self-Determination Theory also has its roots in White's early research on effectance motivation. Following deCharms, Edward Deci and Richard Ryan proposed that individuals have an intrinsic need to feel competent and in control of their learning experiences—that their behaviors are self-determined (Deci and Ryan 1985). In this context, rewards for learning in the classroom can be seen as controlling and problematic for the development of intrinsic motivation. Experimental evidence for the potential of extrinsic rewards to undermine intrinsic interest was first offered by Mark Lepper and his colleagues (Lepper, Greene, and Nisbett 1973). They proposed the "overjustification hypothesis"—that students' intrinsic interest in an activity may be undermined by encouraging them to engage in the activity in order to obtain a reward.

In his well-known study, Lepper defined a target activity as drawing with colorful marker, and made these available to preschoolers. In a baseline measure of intrinsic interest, he observed the amount of time children drew with the markers. Lepper then asked the children to draw a picture for an adult under one of three conditions: no reward (control group), expected reward (children were told they would receive a reward for drawing the picture), and unexpected reward (children received a reward for drawing, but had no idea it was coming to them). Children who expected the reward spent less time engaged in the activity than children in the other two conditions, and

compared with the amount of time they had played with the markers during the baseline period. Further, the quality of their pictures, as judged by adults who were blind to the experimental conditions, was poorer than those of children in the other conditions.

This study prompted a great deal of debate about the extent to which rewards in the classroom (grades, tangible prizes, verbal and nonverbal approval) may undermine children's natural and intrinsic interest in learning. Deci and Ryan (1985) have argued that in order to understand the effects of a reward, it is important to have some knowledge of how students interpret the reward, or its functional significance (Deci, Koestner, and Ryan 1999). Students are said to interpret the functional significance of rewards in two basic ways: its effect on their sense of self-determination, or autonomy, and their self-perceptions of competence. According to their Cognitive Evaluation Theory, at their most basic level, rewards are interpreted as either controlling of their behavior or indicative of their competence level. If rewards are perceived as controlling, an external locus of control will be fostered and intrinsic motivation will be undermined. If instead rewards are perceived as providing information about competence in a positive, task-involved way, then students' sense of self-determination and perceptions of competence will be enhanced, thus fostering intrinsic motivation. However, when positive feedback is delivered in an ego-involved fashion, it will be perceived as controlling, and intrinsic motivation will decrease.

In a comprehensive review, Deci and his colleagues concluded that tangible rewards decisively reduce intrinsic interest in learning by interfering with self-regulated learning, essentially undermining students' ability to take control and learn to motivate themselves (Deci, Koestner, and Ryan 1999). However, it is critical to have an understanding of the contingencies under which rewards occur. Generally, if rewards are unexpected, they have little effect on intrinsic motivation. If rewards are expected, the results on intrinsic motivation differ as a function of the type of reward. When rewards are task-noncontingent (dependent on simply participating in and not necessarily engaging in a task), there tends to be no effect on intrinsic motivation. When rewards are task-contingent (dependent on either engaging or completing a task) they tend to be perceived as controlling. While

the demand to complete a task is viewed as more controlling than simply participating, it is possible that the competence feedback that accompanies task completion may serve to attenuate the negative effect on intrinsic interest. However, rewards that are performance-contingent (dependent on matching a standard) are most strongly perceived as controlling, since there is clear pressure to meet an expectation in order to receive the reward. Its effect on intrinsic interest is the most undermining of all the reward contingencies. Again, however, for those students who meet the expected standards, the positive feedback may minimize the undermining effect of the reward.

WHAT DO I NEED TO DO TO SUCCEED?

Research on cognitive strategies and self-regulation are at the fore in attempts to address this fundamental question. Self-regulated learning is grounded in Bandura's social learning theory, and is seen as being determined by a mutual and reciprocal interaction between students, their environment, and their behavior (Zimmerman 1989). For example, a student may decide that there are too many distractions in her kitchen to allow for valuable study. If she decides to move to another, quieter part of the house, she will, over time and as a result of how much better it is to work elsewhere (self-feedback), evaluate the effectiveness of this change over time, and make further adjustments as she feels they are needed.

Paul Pintrich has suggested that self-regulated learning consists of four phases that students engage in as they encounter a task. He notes that these are not necessarily linear or explicit, but rather reflect a heuristic to understand research on self-regulated learning. According to Pintrich and Schunk (2002), students are thought to first engage in some sort of forethought and planning that sets learning in motion. They monitor their performance during the task and attempt to control the outcome during the process. They then react to and reflect upon their performance.

What gets self-regulated? According to Pintrich and Schunk, cognition, motivation/affect, and behavior are all subject to self-regulation at each of the four phases in the process of learning. For example, at the control phase, students select and adapt cognitive strategies for mastering the task at hand (cognition). They then

select and adapt strategies for maintaining their motivation and affect while they are engaged in the task (motivation). While they attempt the task, they can choose to persist (or give up) and ask for help (behavior). All of these attempts at control are subject to contextual influences. That is, the type and quality of support available to students changes, there is variation in demands that a task places on students, and differences in how tasks are evaluated. These contextual influences play a unique role in students' attempts to self-regulate their learning.

In Zimmerman's conceptualization, meta-cognition—"the decisionmaking processes that regulate the selection and the use of various forms of knowledge"—plays a central role in the ways in which children come to monitor, evaluate, and adjust their learning (Zimmerman 1989). According to Zimmerman, self-regulated learning involves the active participation of students at three levels: (1) meta-cognitively, where students monitor and adjust their performance as a result of feedback; (2) motivationally, where self-regulated learners evaluate their intrinsic interest, their self-efficacy beliefs, and their perceptions of autonomy as they perform a task; and (3) behaviorally, where self-regulated learners select or create conditions that will maximize their learning, and modify these to meet their needs. Students who engage in self-regulated learning actively initiate and target their attempts to increase their skills and knowledge. While they may consult with their teachers or parents, they are not dependent on them to direct their efforts.

Zimmerman argues that self-regulated learning strategies involve the use of specific strategies whose aim is to enhance skills and knowledge in the context of self-efficacy beliefs. Self-regulated strategies include self-evaluation, organizing, goal setting, planning, structuring the environment, and help seeking. In keeping with social learning theory, Zimmerman has argued that self-regulated learning is determined by the interrelationship between personal (self-efficacy beliefs), environmental (physical environment and social experiences), and performance-related (self-evaluation and self-judgments) factors.

The environmental and social influences in Zimmerman's model speak to the context in which learning takes place. All learning experiences are accompanied by feedback about the quality of students' participation and performance. When students are rewarded for improvements in their performance,

their self-efficacy beliefs increase. And, there is an association between the self-regulation of learning and self-efficacy beliefs. Students who are higher in self-efficacy engage in more self-monitoring and display more effective learning strategies. But what about students who do not seem to know what they should do to try and improve their performance? Zimmerman has shown that modeling of strategies, especially when accompanied by verbal encouragement, can have a profound impact on self-efficacy beliefs, even among students with a history of school difficulty and failure (Zimmerman, Bandura, and Martinez-Pons 1992).

One aspect of self-regulated learning that has received research attention is help seeking. Recall that, according to goal theory, help seeking for some students may be tantamount to an admission of lack of ability. Yet, it is clearly very adaptive for students to be able to identify the point at which they need help, and then actively seek it. Richard Newman has defined adaptive help seeking as involving three related components. From a cognitive perspective, students need to know when they need help, and then what kind of help to ask for, so that their needs will be met. From a social perspective, students need to know that they can indeed ask for help, and need to be able to identify individuals who can help them. From a motivational perspective, students need to identify goals for themselves and possess attitudes that will foster learning, such as a willingness to attempt challenging tasks and admit the need for help (Newman 1990a).

In a study of third, fifth, and seventh graders, Newman examined the relationship between perceived competence, intrinsic/extrinsic motivation, and help-seeking behavior. He found that while students at all ages recognized the benefits of asking for help, they also expressed concerns about being embarrassed by the need to ask for help. However, students with greater perceptions of self-competence were less likely to believe that there were negative costs associated with asking for help. This implies that those most in need of help may be the least likely to seek it. Newman's vulnerability hypothesis of help seeking suggests that students with lower self-esteem feel a more urgent need to preserve their self-worth, and may consistently avoid situations where they risk failure (Newman 1990b).

Janine Bempechat and Anna Mirny

THE SOCIALIZATION OF ACHIEVEMENT

A great deal of research is focused on the ways in which parents socialize their children for the role of student. This work considers both how parents prepare their children intellectually for formal learning, as well as the ways in which they communicate their beliefs and attitudes about learning and schooling. As we show, much of the current research places culture and context at the center of investigations on family influences in achievement and motivation.

DEMOGRAPHIC INFLUENCES

There are certain demographic characteristics of families that serve to put children at risk for school failure. These include poverty, low parent education, single parenting, and ethnic and language minority status. The stresses associated with poverty may leave many parents short on the time and energy they need to plan and foster intellectual skills in and out of the home. Parents who are high school dropouts may themselves have had very negative educational experiences, which may make them less likely to trust in the school and its agents. They may thus be less likely to foster beliefs about learning that are adaptive for future success. Relative to higher-educated parents, those with lower levels of education tend to have lower expectancies and hold their children to lower standards for behavior and academic achievement. Finally, ethnic minority parents, including those who speak a language other than English at home, may experience a discontinuity of values between school and home and may thus find it difficult to support the school's goals for their children (Eccles, Wigfield, and Schiefele 1998).

These factors operate to influence school achievement and motivation indirectly, but are not necessarily predictive of underachievement. Many protective factors operate to offset the potentially debilitating effects associated with poverty and other risk factors. These include powerful mentors, strong schools, and individual resiliency, all of which can propel children to dedicate themselves to school success. For example, Charles Harrington's retrospective study of successful African American female

professionals showed that, in many cases, their interest in learning and in furthering their education had been recognized and nurtured by an involved and caring teacher (Harrington and Boardman 1997). These women developed a strong sense of altruism and a desire to help others, partly as a result of these mentoring experiences.

EARLY RESEARCH

Children's achievement beliefs and behaviors are profoundly influenced by the ways in which their parents socialize them for learning and schooling—their educational socialization practices. From actual teaching and household rules to attitudes about the importance of education, parents' educational beliefs and behaviors guide their educational socialization practices with their children, which in turn have a causal influence on their children's developing beliefs. However, parents' beliefs do not develop in a vacuum. They evolve in personal, social, and cultural contexts, all of which interact to influence parents' beliefs and behaviors around their children's schooling.

Early research into this issue was grounded in the "need for achievement" tradition. In a now classic study, Bernard Rosen and Roy D'Andrade found that, relative to boys with low need for achievement, those with high need for achievement had parents who had higher expectations, were more nurturing, and had more confidence in their sons' abilities to succeed (Rosen and D'Andrade 1957). For example, in a problem-solving task, the parents of boys with high need for achievement were more actively encouraging and praised their sons more for their performance. These parents' behaviors were seen as fostering initiative and independence in learning.

Diana Baumrind's later research on childrearing practices suggested that authoritative parenting, in which parents are democratic and warm, but firm, was associated with optimal achievement motivation (Baumrind 1971). This was contrasted with authoritarian parenting, in which parents maintain strict control in a non-nurturing fashion and allow little room for discussion about household rules. At the other end of the spectrum was permissive parenting, in which parents were very warm and nurturing, but made little demands for maturity.

Children of authoritative parents were found to

be independent, assertive, cooperative, self-reliant, and highly motivated to achieve. In contrast, children of authoritarian parents tended to lack vitality and girls in particular were very dependent on their parents and lacked achievement motivation, while children of permissive parents tended to lack self-control. Interestingly, both authoritarian and permissive parents, in their own ways, tended to shield their children from stress. Authoritarian parents greatly restricted their children's experiences, while permissive parents tended to protect their children from the consequences of their own behaviors. As we will see later on, a certain amount of intellectual stress may be necessary for the development of adaptive coping mechanisms.

COGNITIVE AND MOTIVATIONAL SOCIALIZATION

In some families, the socialization of achievement operates in ways that produce a relative match between the child's learning skills, attitudes, and motives, and the demands of the school. In other families, the socialization of achievement is such that children have difficulty realizing their potential, develop poor attitudes, low expectations, and maladaptive achievement behaviors. Researchers seeking to address family influences in achievement motivation have followed two primary lines of inquiry. The first, broadly conceived as cognitive socialization, is concerned with how parents foster the development of their children's intellectual skills. The second, motivational socialization, is focused on the ways in which parents foster the development of beliefs and attitudes that are conducive to learning. Both are aspects of parent involvement and operate in tandem to facilitate or inhibit adaptation to formal schooling.

Cognitive Socialization

Early research in cognitive socialization tended to focus on general issues, such as whether or not parents provide their children with tutoring when they need it. Since the 1950s, research on cognitive socialization has focused heavily on parent-child (usually the mother) interactions, and is grounded in the cognitive developmental theories of Lev Vygotsky and Jean Piaget. Due to the pragmatic difficulties of interviewing fathers, most research has focused on the

mother-child dyad. The underlying assumption is that parents function essentially as teachers, and that their behavior with their children is contingent on the specific contexts in which they interact. Instruction is not necessarily explicit. Rather, parental teaching is embedded in daily life, and occurs in subtle and indirect ways. For example, many parents are unaware that they are teaching aspects of categorization skills when they have their children help them put away groceries (e.g., canned fruit goes on the middle shelf, but canned vegetables go on the bottom shelf).

Irving Sigel proposed the construct of distancing to examine the ways in which parents foster the development of abstract thinking. According to Sigel, distancing is the separation of the individual from the immediate present, and is critical for the development of representational skills (Sigel, McGillicuddy-DeLisi, and Goodnow 1992). Sigel suggested that parental distancing strategies vary along a continuum and activate representational thinking in different ways. For example, most parents, when reading a picture book to their children, ask them to observe and label (e.g., "Where is the kitty?" "What color is the rabbit?"). Other parents go further and ask their children to anticipate developments in the story, propose alternatives, or resolve conflict (e.g., "Where do you think the kitty will go next?" "How do you think the kitty and the rabbit can share the food they found?"). It is apparent that observing and labeling are less intellectually demanding than proposing alternatives or resolving conflict. The latter strategies require that children "stretch" their minds in search of answers to parents' questions. Sigel has found that, relative to parents who focus on lower-order activities, those who engage their children in higher-order thinking of this nature foster greater representational thinking skills in their children. In so doing, these parents are helping their children to be better prepared for the beginning of formal schooling.

Through her concept of situated learning, or learning in context, Barbara Rogoff extended Vygotsky's theory of cognitive development to argue that parents implicitly bridge the gap between the unfamiliar and the familiar by guiding and facilitating children's learning. Vygotsky proposed the notion of the zone of proximal development (ZPD), which represents a skill that is just beyond a child's reach (Vygotsky 1978). The ZPD is said to arise from the mutual and dynamic

relationship between adults (experts) and children (novices). Interactions over time result gradually in the child being able to complete a novel task entirely on her own. Rogoff extended this notion by suggesting that parents are critical in helping their children find connections between problems that are novel and ones that are already familiar (Rogoff 1990). This process is akin to a scaffold, in that parents monitor tasks, provide hints at appropriate places, and model strategies and adaptive coping skills when a task is difficult. In other words, parents work to create a context in which the unfamiliar gradually becomes familiar. Parents probably do not have explicit instructional strategies in most cases for teaching their children how to master new skills. However, in keeping within the ZPD, parents learn (ideally), as a result of their interactions with their children, the best ways to offer just the right amount of challenge. Importantly, Rogoff has placed context and culture at the center of her investigations on cognitive socialization, a topic we explore more fully later.

Not surprisingly, research has revealed social class differences in parents' cognitive socialization practices. For example, middle-income mothers in Sigel's study were more likely than lower-income mothers to engage in higher levels of questioning in the problem solving tasks. In a related vein, Robert Hess's study of mothers' communication and interactions styles showed that middle-income mothers were more likely to foster an active and assertive approach to learning. In contrast, lower-income mothers were more likely to foster a passive and compliant approach (Hess and Shipman 1965). For example, when asked how they would prepare their children for the first day of school, middle-income mothers stressed that school was a place to learn and increase skills and knowledge. Lower-income mothers focused on the importance of proper behavior, such as listening to the teacher.

Motivational Socialization

Parents' motivational socialization strategies are also seen as implicit. The accumulated evidence suggests that parents' attitudes, values, and beliefs about learning and education guide their interactions with their children and have a causal influence on their children's developing achievement beliefs and behaviors (Bempechat 1998). In an extension and applica-

tion of Nicholls' research, Carole Ames found that performance-oriented and mastery-oriented mothers differed in how they defined success, preferred different kinds of feedback and tasks, and evaluated desirable student qualities differently (Ames and Archer 1987). Performance-oriented mothers preferred tasks that ensured success, were more likely to attribute success to ability, preferred feedback that indicated relative standing in the classroom (normative feedback), and viewed the ideal student as one who had high ability and succeeded with little effort.

In contrast, mastery-oriented mothers preferred tasks that would challenge their children, were more likely to attribute success to effort, and valued children who had low ability, but tried very hard. It is possible that mothers who emphasize performance over mastery may not be modeling for their children strategies for coping with difficulty and setbacks. We will return to the general theme of resiliency in a later section.

The influence of parents' beliefs about learning is particularly striking in research on mothers' differential perceptions of the causes of success and failure in mathematics in boys versus girls. Mothers tend to attribute the success of girls to high effort, and failure to low ability. In contrast, mothers tend to attribute the success of boys to high ability, and failure to lack of effort (S. D. Holloway and Hess 1985). The implicit message to girls is that failure in math is the result of an internal, stable quality over which they have no control, while boys are conveyed quite the opposite view.

Several researchers have documented social class differences that have challenged a widely held assumption that lower-income parents simply do not care about their children's education. Annette Lareau's work has been particularly influential in this area (Lareau 1987). In her ethnographic research, Lareau has showed that, contrary to teachers' beliefs, lower-income parents were as concerned about their children's education as middle-income parents. They differed, however, in their beliefs about their role versus the teacher's role in educating their children, and also had very different perceptions of self-efficacy in their ability to help their children. Middle-income parents viewed their children's education as very much a mutual concern between home and school, while lower-income parents believed that their children's education was more the responsi-

bility of teachers and the school. As a result, they read to their children, initiated interactions with teachers, and attended school events much less frequently than did middle-income parents. Lower-income parents also reported feeling reluctant to help their children, for fear that they might mislead them academically.

Lareau suggested that lower-income parents' inferior education and lower-prestige jobs led them to be more dependent on teachers to know what is best for their children. In particular, she argued that middle-class culture provides parents with more cultural capital. Given their own levels of education, they have access to more knowledge about schooling and more resources to turn to in the event that their children need help. This serves to further the interdependence between home and school contexts.

PARENT INVOLVEMENT

Parent involvement represents a complex set of beliefs and behaviors, all of which are beneficial to students' academic achievement and motivational resources. Parents who consistently stay abreast of school developments have higher-achieving children than those who maintain minimal contact. Similarly, involved parents tend to develop more positive attitudes towards the school and its teachers. They tend to see their children's teachers as genuinely interested in helping them support their achievement at home (Epstein 1987). Joyce Epstein's extensive research has examined ways in which the home-school connection can be strengthened to foster parent participation (Epstein 1987; Epstein and Van Hooris 2001). Epstein proposed a model of educational socialization that identified six aspects in the home environment that foster academic achievement. She describes these as **TARGET** structures, and they include **T**ask (the variety of activities in which children participate at home), **A**uthority (the extent to which children participate in family decisionmaking), **R**eward (the ways in which parents reward their children for intellectual progress), **G**rouping (how parents influence their children's interactions with family members and peers), **E**valuation (standards and expectations for performance), and **T**ime (how parents help their children manage their time).

Epstein has suggested that parent involvement can be fostered by communicating strategies that parents

can use to make their homes conducive to learning, staying in frequent contact about student progress, enlisting parents as volunteers in school activities and on governing councils, and providing teacher assistance with educational tasks at home. Epstein recently proposed an interactive approach to homework, in which students involve their families in their homework assignments. Her TIPS homework design (**T**eachers **I**nvolve **P**arents in **S**choolwork) depends on very carefully crafted and explained homework assignments. For example, the language arts homework assignments require students to engage in such activities as reading the writing prompts out loud, discussing the topic with members of their family, reading their assignment out loud, and taking notes on their family's reactions to their story. Across subject areas, participation in TIPS is associated with more parent involvement, greater completion of homework, and higher achievement (Van Hooris 2001).

Given the variety of ways in which parents can involve themselves in their children's schooling, researchers have found it helpful to integrate aspects of cognitive and motivational socialization in their investigations of predictors of parent involvement. Wendy Grolnick has proposed that parent involvement is best conceptualized as a multidimensional construct in which involvement occurs at three levels (Grolnick et al. 1997; Grolnick and Slowiaczek 1994). Overt behavior, or school involvement, describes such activities as attending parent-teacher conferences and other events at school. Personal involvement is characterized by demonstrations that parents enjoy their children's school, as well as their interactions with teachers and staff. Cognitive/Intellectual involvement includes providing help with homework and exposing children to intellectually stimulating resources and activities, such as trips to the museum.

Grolnick found that these different dimensions of parent involvement vary as a function of social class. Among the third through fifth grade students she studied, she found that more highly educated mothers were more likely to be involved at the intellectual/cognitive level. However, there were no social class differences in behavioral involvement, suggesting that lower income, less educated parents do indeed become involved in their children's schooling. Greater behavioral and intellectual/cognitive involve-

ment was associated with higher perceived competence and sense of control over learning outcomes. Grolnick suggests that parents who attend school events may be communicating its importance to their children, and may be also modeling ways to deal with questions or concerns. This is one way in which children may come to see school outcomes as within their control. Additionally, parents who make intellectually stimulating resources available may make their children more comfortable with cognitive, school-related tasks. This familiarity may also serve to foster the view that these kinds of activities are controllable.

In a later expansion of her model, Grolnick examined the dimensions of parent involvement from an ecological perspective in order to develop a model of factors that affect parent involvement. She focused specifically on parent involvement at the individual (e.g., parent self-efficacy, child temperament), contextual (family circumstances), and school (teacher practices) levels. At the individual level, she found that parent involvement was related especially to the intellectual/cognitive dimension. Parents who reported that their children were difficult were less likely to engage with them in intellectual tasks, most likely because they find it difficult to work with them.

School/behavioral involvement was found to be lower in lower income families whose context was difficult. In addition, difficult family context and lack of social support was associated with less personal involvement. Grolnick suggests that stressful family circumstances may make it difficult for parents to attend to the details of daily school life. Difficult family context also undermined school involvement in mothers of boys, but not girls. As Grolnick argues, it may be that, under stressful family circumstances, mothers of boys may perceive them as being less needy, and may focus their limited energies on their girls.

Interestingly, teacher practices that seek to involve parents appeared to have the greatest impact on parents who had the most resources. Parents with high self-efficacy regarding their parenting skills, who saw themselves as teachers, and whose family circumstances were less stressful, were the most likely to respond to teachers' efforts at involvement. In other words, teacher attempts at parent involvement may not reach the parents whose children would benefit the most from their attentions. These findings point

to the importance of accommodating the differential needs of different families, and of being flexible in the design of programs intended to foster parent involvement.

ETHNICITY AND THE SOCIALIZATION OF ACHIEVEMENT

Indicators of achievement show that, despite steady gains in academic achievement, the school performance and educational attainment of African American and Latino students continues to lag behind that of their Caucasian and Asian American peers. For example, the High School Transcript Study, conducted by the National Assessment of Educational Progress (NAEP), found that in the decade from 1990–2000, high school GPA rose for all students (NAEP 2003). However, ethnic gaps in achievement were evident, with Asian American and Caucasian students performing significantly better than their African American and Hispanic peers (NAEP 2000). Math and English assessments from the 2000 NAEP assessments show similar ethnic discrepancies. Nationally, African American and Latino students have a higher high school dropout rate (13.1 percent and 27.8 percent, respectively) relative to their Caucasian and Asian American peers (16.9 percent and 3.8 percent, respectively). Finally, among 18–24 year olds, 35.9 percent of Caucasian, 18 percent of African Americans, and 8.9 percent of Latinos have completed four years of college.

These achievement data are cause for great concern. As the demographics of our nation continue to evolve, educators find themselves having to meet the educational needs of an increasingly diverse student population. It has become progressively more urgent to understand factors underlying the achievement gap. Unfortunately, relative to the research that has been conducted on school failure, relatively little has focused on factors that promote success. For example, when efforts at compensatory education began in earnest in the 1960s, the prevailing attitude was that low-income parents were failing to provide their children with adequate stimulation and training, thus stunting their basic cognitive development. This "deficit model" focused not on children's motivation or their school learning, but on basic cognitive deficiencies that were presumed to result in school failure. The underlying assumption was that if low-

income parents could be encouraged to become more like white, middle-income parents, then the achievement gap would narrow.

The difficulty with this and other research that is focused on between-group, or inter-group differences, is that middle-class white children are considered the normative standard against which all children can be compared. It has become increasingly clear that this approach is methodologically flawed, and prominent researchers, such as Diana Slaughter-DeFoe and Margaret Beale-Spencer, are arguing that in order to advance knowledge and understanding, research must become more culturally sensitive (Slaughter Defoe et al. 1990; Spencer et al. 2001). One way to accomplish this is to conduct within-group, or intra-group, analyses of variation in achievement and motivation. Studying how high and low achieving students within one ethnic group differ in their achievement beliefs, for example, can provide insights to teachers that can help them in their daily work with students.

Some early inter-group research on cognitive socialization in African American families suggests that high achievers may have mothers who are more effective teachers. Diane Scott-Jones (1987) found that mothers of higher-achieving first grade students integrated learning into their daily routines, made more books available to their children, and held academic (learning) as opposed to behavioral (compliance) goals for their children. Norman-Jackson (1982) similarly found that children who later became good readers had parents who, at an early age, encouraged verbal interaction that was initiated by their children, provided more explanations, taught their children letter recognition, and played "school" with them.

With respect to motivational socialization, some retrospective studies of African American students have reported that high-achieving students recalled that their parents may not have helped them with homework, but provided a great deal of support for their education. For example, one study found that students recalled their parents as having believed in the work ethic, even in the face of blatant racism (Edwards 1976). In a well-known ethnographic investigation, Reginald Clark studied the family life of high- and low-achieving African American teenagers in a public housing development. He found that parents of high-achieving students, though not well educated themselves, were determined that they would

escape poverty through education. They made financial and personal sacrifices for their children's schooling, and believed that learning was the mutual responsibility of home and school. These parents felt strongly that children should be held responsible for their education by attending school regularly, paying attention in class, and actively participating in classroom discussions. They had clear expectations that homework and other assignments would be completed on time, maintained regular contact with the school, and set consistent limits on their children's behavior, both in and out of school. In short, they appeared to engage in what Baumrind called authoritative parenting.

In contrast, parents of low achievers were very permissive, had virtually no rules about household chores or schoolwork, and were unaware of day-to-day aspects of their children's school lives. These parents were interested in their children, but had a sense of powerlessness about their school achievement. They had little or no involvement in their children's school and did not take responsibility for their children's academic achievement. While parents of high achievers expected them to complete some sort of post-secondary schooling, parents of low achievers hoped that their girls would marry and their boys would find jobs.

Current research is placing culture at the center of investigations into parents' educational socialization strategies. Harkness and Super's notion of the "developmental niche" is particularly helpful in understanding how parents' behavior is shaped by the culture in which they live (Harkness and Super 1992). This theoretical construct examines how culture operates to define and regulate children's environments. According to Harkness and Super, the child's physical and social settings, the family's customs of child rearing and child care, and the psychology of caregivers operate in tandem as a system that mediates their children's individual experiences in their culture. Daily social and cultural activities are presumed to reflect parents' goals for their children, and parents' child rearing practices are representative of their cultural goals (Harkness and Super 1992).

For example, recall the influence that parents' beliefs about intelligence have on their children's developing beliefs. There is not one definition of intelligence, effort, or ability that can be said to apply across many ethnic or cultural groups. Views

about what constitutes intelligent behavior vary as a function of culture. Understanding this variation can help us understand the different goals that parents have for their children. In their investigations of parenting and school achievement in Latino families, Ronald Gallimore and Claude Goldenberg have found that the notion of *bien educado*, or being well brought up, has different meanings in U.S. and Latino contexts. For Latino parents, a child who is *bien educado* has high moral character and behaves appropriately in social situations. Innate ability, which is the salient aspect of intelligence in mainstream U.S. culture, has less importance for Latino parents (Reese et al. 1995). A child can do well in school, but not be considered *bien educado* if she is disrespectful and selfish.

Gallimore and Goldenberg addressed the issue of inter- and intra-group variability by proposing that cultural models be distinguished from cultural settings (Gallimore and Goldenberg 2001). In their framework, a cultural model is a mental schema, a shared understanding of how the world works. A cultural setting, in contrast, is an activity that two or more individuals come together to pursue. Culture exists and is co-created in collaborative activities that people value, such as a parent teaching her child how to cook. According to Gallimore and Goldenberg, cultural settings can vary within a cultural model. In their qualitative studies of Latino parents' cultural models of schooling, they documented that parents assigned little importance both to reading to their preschool children and their children's pre-literacy activities, such as pretending to read. Far from indicating a lack of interest or concern with their children's literacy development, these mothers adhered to a cultural model in which it makes more sense to begin reading to children when they are old enough to understand the material. Early "pretend" reading was thought of as playful behavior that did not necessarily have any value for later reading ability.

While this cultural model of literacy was shared among the Latino families, many factors influenced variation in cultural settings in which literacy developed. For example, one mother's involvement in her church community, parents with greater educational experiences in Mexico, and another mother's exposure to her employer's literacy activities with her own child were all variables that prompted literacy ac-

tivities at home that deviated from the cultural model.

Importantly, Gallimore and Goldenberg have used their research findings to inform literacy intervention strategies that have been successful with Latino families. In one study, conducted over the course of a school year, they gave kindergarten children either small books (*libros*) or worksheets designed to promote literacy at home. Both the researchers and teachers expected that the *libros* would stimulate co-reading and re-reading between parents and children, thus improving literacy skills. Surprisingly, while children who had been assigned *libros* had greater literacy skills at the end of the year than their peers who had been assigned worksheets, the use of worksheets and not *libros* was related to increased literacy skills. Rather than engage in co-reading, parents had used the *libros* in the same way that the other group had used the worksheets—as a platform from which new words could be practiced by rote and repetition. In other words, these parents adapted the *libros* to fit their cultural model of how literacy develops.

This research does not support the general stereotype that poor ethnic minority parents do not care and are uninvolved in their children's schooling. Instead, it highlights the extent to which it is critical to understand how parents' cultural models influence the learning goals they set for their children, as well as the ways in which they choose to foster these goals. This culturally sensitive approach to research on ethnic minority children and their families holds great promise for extending our understanding of how achievement motivation develops in diverse families, and how we can plan intervention to foster academic achievement in culturally appropriate ways.

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ETHNIC AND CULTURAL INFLUENCES IN ACHIEVEMENT MOTIVATION

Interest in ethnic and cultural influences in achievement motivation has burgeoned over the last twenty-five years. Efforts to adopt a more comprehensive approach to understanding the achievement gap in

the United States coincided with the emergence of data from cross-national studies of achievement, all of which showed that American students lagged behind their peers in Asia and much of Western Europe in math and science skills. These achievement differences prompted researchers to pay closer attention to cultural models of learning.

In the United States, the adaptation of ethnic minority children to the culture of schooling received a great deal of attention when John Ogbu, a cultural anthropologist, suggested that many African American students perceive that to succeed in school is to implicitly betray their ethnicity (Fordham and Ogbu 1986; Ogbu 2003). Because schools exemplify white, middle-class culture, issues of ethnic identity loom large for some students. According to Ogbu, the major reason that African American students underperform in school is because they experience “inordinate ambivalence and affective dissonance” about school success. As “caste-like” minorities, who were forced by slavery or conquest into this country, institutionalized racism and discrimination have had a pervasive and insidiously negative influence on the development of achievement beliefs and behaviors. Because whites historically refused to acknowledge African Americans’ intellectual ability, the latter began to doubt their abilities and came to view achievement as the province of whites only. An antiachievement ethic emerged, in which students began to discourage peers from academic success, equating this behavior with “acting white.”

Fordham and Ogbu argued that African American students have developed an “oppositional frame of reference” that includes strategies for protecting their ethnic identity. In interviews with African American students in a predominantly black high school, they found that underachievers knowingly undermined their own achievement by not studying and cutting classes. High-achieving students were committed to doing well, but reported that they had developed strategies for coping with academic success that included acting out, taking on the role of class clown, keeping their efforts a secret, and generally maintaining a low profile. They were very concerned about being labeled the derogatory “brainiacs” and being accused of “acting white.” Similar findings have been reported among Latino youth as well (Matute-Bianchi 1986) and, recently, among affluent African American students (Ogbu 2003).

It has been suggested that the “acting white” phenomenon is problematic, largely because it assumes that white, middle-class culture is the normative reference point for African American students. In a challenge to Ogbu’s theory, Margaret Beale Spencer and her colleagues have found that high achievement among African American high school students is associated with high Afrocentricity and high self-esteem (Spencer et al. 2001). Doing well in school for these students was not associated with identification with white culture. These findings underscore the importance of a culturally sensitive approach to research on ethnic minority groups.

In this context, Claude Steele’s construct of “stereotype threat” is particularly useful in understanding the dynamics underlying the achievement gap (Steele and Aronson 1995). Steele has argued that the negative stereotype of African Americans’ intellectual ability interferes in a substantive way with student achievement. In situations where ability is at issue, African American students fear confirming their racial group’s stereotype and therefore “disidentify” with the school and its values through lack of effort or other self-defensive attempts to maintain their self-esteem.

Increasingly, researchers are agreeing that any investigation into factors that influence academic achievement should be conducted from an ecologically valid perspective. It is widely accepted that the multiple contexts in which children live and grow need to be considered in order to develop a comprehensive understanding of school achievement and academic motivation. Lynn Okagaki’s Triarchic Model of School Achievement is one example of a holistic approach to research on ethnicity and achievement (Okagaki 2001). She has proposed that there are three major factors that influence school achievement. The perceived form and function of school can foster resistance to schooling in a number of ways. For example, children whose culture stresses cooperation, interdependence, and places the needs of the group above those of the individual may experience a discontinuity between their home values and those of the school. Public schooling in the United States is a largely individual and competitive enterprise, and children who feel uncomfortable speaking out in class or making eye contact with teachers and peers may be at a severe disadvantage. Their relatively humble behavior may be misconstrued as academic disengagement, as has been the case with Native American children.

Further, research has shown that ethnic minority children and their parents perceive the function of schooling in a qualitatively different way from other groups (Steinberg 1996; Steinberg, Dornbusch, and Brown 1992). Lawrence Steinberg's survey research has demonstrated that, while African American, Latino, Asian American, and white students agree that a good education is likely to improve one's chances of having a good job, only African American and Latino students believe that one can obtain a good job without a good education. As he and others have argued, students need to see the vital connection between education and a secure future. They need to perceive the benefits that a good education offers, but this may be difficult for those students who perceive a discontinuity between home and school values, and who are simultaneously witness to barriers to opportunity in the workplace. Okagaki and others have suggested this has not been an issue for many students of Asian descent, largely because of cultural models that place a high value on learnedness. Parents tend to view their role as that of facilitating and ensuring educational attainment, and children are aware that high achievement is important to maintaining family honor.

In addition, Okagaki argues that the role of the family is a critical factor in her model of achievement influences. She highlights aspect of cognitive and motivational socialization discussed earlier—high expectations, the belief that effort can enhance one's intelligence, direct and indirect help and encouragement, and a belief that they can indeed foster their children's school achievement. Finally, the role of the child or, more specifically, a resilient academic identity, is seen as the third component of the triarchic model. As we have seen, school achievement is tied to ethnic identity, and if school success is seen as a subtractive process (one that diminishes one's ethnic identity), it will become problematic for some students to achieve their potential.

Taken together, these different lines of theory and research converge to suggest that schools may be more successful in narrowing the achievement gap through culturally sensitive parent education and student intervention programs. These need to place cultural models of learning at the center and to focus on capitalizing on the many strengths and values that families imbue in their children.

The need to learn from other cultures took on a

decidedly different form of importance during the wave of cross-national research on achievement outcomes during the 1980s. A number of investigations demonstrated the alarming extent to which American students were underperforming in mathematics, especially relative to their Japanese and Taiwanese peers (Beaton et al. 1996; H. W. Stevenson, Lee, and Stigler 1986). In an early study of Japanese, Chinese, and American students, the math achievement of Japanese first graders was shown to be on par with that of their American fifth grade peers. In a ten-year follow-up study, the achievement gap was still evident, and had widened. Larger, more exhaustive investigations showed that in a variety of mathematics subject areas, such as fractions, algebra, geometry, measurement, and probability, American elementary and secondary students lagged behind their peers in many other nations. For example, the Third International Mathematics and Science Study (TIMSS) examined math achievement in forty nations (Beaton et al. 1996). American eighth graders scored significantly lower in average achievement relative to students in half of the nations surveyed, including France, Austria, Japan, and Singapore.

In a series of investigations, Harold Stevenson and his colleagues argued that these achievement differences were the direct result of cultural differences in perceptions of effort and ability. For example, he found that, when asked to rank the importance of effort, ability, luck, teacher quality, and task difficulty, American mothers and children were more likely than Japanese and Chinese mothers and children to implicate lack of ability in explaining school failure. In contrast, Japanese and Taiwanese mothers were more likely to attribute failure to lack of effort (H. Stevenson and Lee 1990). According to Stevenson and his colleagues, American students' underachievement is the result of their (and our culture's) adherence to an "ability" model of achievement. In contrast, Japanese students do well because they (and their culture) embrace an "effort model" of achievement.

These findings were very compelling on their face, and prompted many educators to argue that if American schoolchildren (and their parents) could be convinced of the greater importance of effort over ability, we would begin to see test scores rise. As is the case with much social science, the simplest solution belies the complexity of the factors underlying inter-

national achievement differences. Data from the existing cross-national studies are correlational, which means that we do not know the extent to which Japanese students' effort attributions predict their high performance, or vice versa. Therefore, we cannot reasonably conclude that Japanese children's greater orientation to effort is the cause of their higher achievement. This is especially true in light of the fact that past research has consistently found a strong and positive relationship between ability attributions and academic achievement. Furthermore, large-scale studies do not reveal differences in how students in different cultures interpret such achievement-related concepts as effort and ability.

In arguments echoing the trend in ethnic minority research, cultural psychologists argued that it is inappropriate to assume that traditional theories of psychology, developed within a Western framework, can be universally applied to all cultures (Roopnarine and Carter 1992; Rothbaum et al. 2000; Sinha and Sinha 1997). As Bronfenbrenner stated, a context-free, culture-free environment does not exist (Bronfenbrenner 1979). In essence, meaning making is shared and negotiated within a culture, and how we come to understand aspects of the self, such as ability, has implications for how we come to interpret achievement situations (Markus and Kitayama 1991). The implicit or "folk theories" of learning that all of us possess are embedded in cultural interpretations of how we think about being educated or learned (Bruner 1990). Clearly, then, it is critical to understand that culture guides parental socialization practices, including those having to do with education (Roopnarine and Carter 1992; Serpell and Hatano 1997).

This means, for example, that we cannot properly compare the attributional beliefs of mothers and children without understanding the differential meaning that they bring to bear on these and other educational concepts. In fact, Holloway demonstrated that, in Japan, effort is socially constructed. Individuals speak about effort as a way to fulfill obligations to themselves, their families, and their communities. In the American context, effort is more individually oriented, and means trying hard (Holloway 1988).

At the same time, researchers run the risk of assuming that all members of a given culture adhere to their culture's "cultural model" of development. In

this regard, Japanese and American cultures characterize the comparisons that have been made between "Eastern" and "Western" societies. Broadly speaking, Japanese culture has been characterized as oriented around values of interdependence, while American culture is said to foster independence. Where the Japanese are described as willing to sacrifice individual goals to meet the needs of the groups, Americans are said to work to fulfill individualistic and personal goals (Greenfield 1994; Mouer and Sugimoto 1986).

Cultural assumptions can lead to conclusions that may be too general. For example, James Stigler described the relatively common practice in Japan and Taiwan of asking students to show the class at the blackboard how they are solving math problems that they are getting wrong. This public display of difficulty is contrasted with the more private and individual way that American teachers deal with students having difficulties. Stigler points to cultural differences in beliefs about ability to explain these pedagogical practices (Stigler and Perry 1990). Since Japanese teachers adhere to an "effort model" of achievement, it could be assumed that mistakes are regarded as helpful tools, which in conjunction with hard work, can be used to master any difficulties in understanding. Since American teachers adhere to an "effort model" of achievement, one could similarly assume that having to try hard in front of peers would likely implicate low ability, and perhaps diminish the student's self esteem.

Of course, there may be many Japanese students who are embarrassed by their teachers' practice of sending them to the board. And, there may be many American students who would welcome working a problem out with the help of their peers. The overall message is that, while cultural models of development are helpful, they represent an initial line of inquiry, one that is focused on general group differences. These differences should then be examined through increasingly targeted and nuanced methods, including in-depth interviews and ethnographic studies. This is one way in which researchers can ensure that findings emanating from one setting are not inappropriately applied to members of other settings (Harkness and Super 1992).

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SCHOOL INFLUENCES IN ACHIEVEMENT MOTIVATION

The structure of schooling and the nature of teaching have a profound influence on children's achievement and their developing learning beliefs and behaviors. Many schools engage in ability grouping and tracking, in which students perceived as lower in ability than their peers are separated from their cohorts. In addition, teachers are at times unaware that their feedback practices can communicate low expectations and a belief that a student lacks the ability to be successful in school. Interestingly, the negative effects of these school and teacher factors are attenuated in Catholic schools across the United States. In this section, we will examine research on school structure and teacher expectations, and consider the ways in which Catholic schools, as an exemplar of school choice, foster high achievement in students ordinarily expected to fail.

TRACKING AND ABILITY GROUPING

The notion underlying the tracking at the high school level is that students learn better when they are grouped with peers of similar ability. Educators have worried that bright students may be held back by slower students who, in turn, need to have their self-esteem protected from exposure to higher ability peers in heterogeneous classrooms. Further, it has been suggested that the learning problems of slower students can be better addressed in like-peer groups. In its ideal manifestation, tracking and ability grouping should represent different pathways to the same academic outcome. (At the elementary-school level, the term *ability grouping* is used to denote instances where students are grouped by ability level, usually for reading.) In other words, all students should be exposed to the same material, albeit at different rates.

Much of the research on the determinants and effects of tracking has been conducted by educational sociologists. They typically make use of large data bases, such as the High School and Beyond (HSB) study. The primary advantage of such data sets is that the data are longitudinal and the participant pool sufficiently large (several thousands of students) and nationally representative to allow for sophisticated

data analysis. In most analyses, the roles of background variables, such as socioeconomic (SES) status, parent education and occupation, gender, number of siblings, educational expectations, goal orientation, and academic self-concept are taken into account. Predictor variables often include outcomes such as GPA, class rank, and plans to attend college.

Researchers who have studied the determinants of tracking have found consistently that lower income students and students of color are overwhelmingly placed in lower tracks, in numbers disproportionate to their representation in the population. For example, one large scale, nationally representative survey found that social class had an influence on track placement independent of its influence on academic achievement. Results showed that students in the top SES quartile had a 53 percent chance of being placed in an academic track, while those in the bottom quartile had a 19 percent chance of being similarly placed. At the other end of the spectrum, students in the top SES quartile had a 10 percent chance of being placed in the bottom track, while those in the bottom SES quartile had a 30 percent chance of being similarly placed (Vanfossen, Jones, and Spade 1982).

Tracking affects academic outcomes and experiences in substantive ways. For example, Adam Gamoran (1987) found that placement in an academic track results in high math and verbal SAT scores, higher high school GPAs, and high scores on achievement tests. He argued that that these higher outcomes are the result of exposure to a more demanding curriculum, while other researchers have suggested that these secondary school outcomes are more the result of academic trajectories that are set in motion much earlier (Alexander and Cook 1982.)

In her ethnographic studies of high-school students, Jeannie Oakes has documented the negative effects of tracking on student achievement and motivation (Oakes 1990). She found that high-tracked students are challenged to acquire complex cognitive competencies. For example, when she asked students to describe their English classes, high-tracked students reported that they wrote and read more than their low-tracked peers, and engaged in tasks that fostered higher order thinking, problem solving, and evaluative skills. In contrast, low-tracked students reported involvement in rote learning activities that fostered simple memory and reading comprehension.

Higher-tracked students believed that their teachers held high expectations for them and expected them to acquire higher order skills. In contrast, lower-tracked students perceived that their teachers expected them to acquire “life skills,” such as being able to open a bank account, and demanded conformity in the classroom.

Further, low-tracked students reported being in classrooms marked by much disruption and perceived their teachers as unmotivated, unenthusiastic, and punitive. High-tracked students reported learning from supportive teachers who were engaged in their subject area. Relative to lower-tracked classes, students in higher-tracked classes are more likely to come into contact with peers who are highly motivated and have college aspirations. Given this differential pattern of experiences, it is not surprising that lower-tracked students report lower self-esteem, lower aspirations, and feelings of alienation.

Researchers and educators concerned about the negative effects of tracking have suggested ways in which to attenuate its influence. The most obvious is to avoid tracking altogether, under the assumption that it helps a few students at the educational expense of many. “Untracking” can be made to work if teachers receive professional development training in teaching heterogeneous classrooms, students are provided with extra help when they need it, and classrooms are oriented around cooperative learning. Alternatively, some researchers have suggested tracking be postponed until as late as possible, and that schools develop better placement criteria. Specifically, a portfolio of learning that includes multiple assessment measures is said to be preferable to a single criterion, such as end-of-year grades.

TEACHER EXPECTANCIES

In a study that received a great deal of attention, Robert Rosenthal examined interpersonal expectancy effects—the effect of one person’s expectations for the behavior of another person on that person’s behavior—in a school setting. In what came to be known as the “Pygmalion Study,” Rosenthal administered to all students in one elementary school in California a test that was described as an assessment to identify students who would “bloom” academically the following year (the Harvard Test of Inflected Acquisition) (Rosenthal and Jacobson 1968). This test

was actually a standard intelligence test. He randomly picked about two students in each classroom as “bloomers” and identified them as such to their teachers. He provided no advice or intervention strategies for teachers to use. Rather, he simply waited until the end of the next school year, and re-tested the children. His results were quite surprising.

At all grade levels, children from whom teachers expected intellectual gains showed a significant increase in their intelligence test scores. Teachers described these children in very positive ways, as happier, more curious, more interesting, well adjusted, and more appealing and affectionate, relative to the “non-bloomers.” In addition, the teachers believed that the bloomers had a significantly greater chance of becoming successful in the future. It appeared, therefore, that the teachers had managed to convey their high expectations in ways that resulted in achievement gains. How might this have happened?

Rosenthal proposed a four-factor theory of the communication of expectancy effects. He argued that teachers create a warmer social and emotional climate for their special students; that they provide them with verbal and nonverbal feedback that is more differentiated; that they teach their special students more material of a challenging nature (input); and that they give them greater opportunities to respond, both verbally and nonverbally (output).

According to Rosenthal, the direct effect of teachers’ negative expectations is that, over time, they deny their students opportunities to learn. Indirectly, teachers may communicate low expectations by not waiting long enough for students to respond to a question, or not scaffolding their responses. They may criticize them more often for failure and praise them less often for success. Or, they may praise their students for intellectually inappropriate aspects of a task, conveying no information that is helpful for learning. They may choose to seat these students at the back of the class, and generally pay less attention to them.

The controversy surrounding what the Pygmalion Effect spawned an enormous literature on teacher expectancy effects. Jere Brophy and Thomas Good, in reviewing the literature, found that across a variety of studies with students at different ages and employing different methods, the research has come to show that teacher expectations can and sometimes do have self-fulfilling prophecy effects on student

achievement (Brophy and Good 1974). However, these effects, as measured by some studies, are relatively small in the classrooms of most teachers, largely because most teachers hold accurate perceptions of their students' abilities. And, most teachers correct their assumptions when confronted with information that disproves a given expectation. The effects are larger, however, in cases where teachers' perceptions are both inaccurate and rigidly held. The deleterious effects of teacher expectations are most apparent in such cases. According to Brophy and Good, the probability of self-fulfilling prophecy effects depends more on the rigidity with which expectations are held than with their accuracy.

CATHOLIC SCHOOL ACHIEVEMENT

Catholic schools have provided a fertile environment for the study of achievement in low-income students of color. Since the 1980s, a great deal of evidence has converged to show that, across a variety of pre- and post-secondary measures of achievement, including GPA, SAT scores, high school completion, and college attendance, low-income students of color attending Catholic schools attain outcomes that are significantly higher than those of their peers in public and private, non-sectarian schools. These findings challenge the view that factors that are ordinarily expected to place students at risk for school failure necessarily predict negative academic outcomes.

In his early research using the High School and Beyond (HSB) data set, James Coleman demonstrated that, relative to high SES students, low SES students achieved greater gains in math and reading in Catholic than in public or private, non-sectarian schools (Coleman, Hoffer, and Kilgore 1982). This comparison held as well for ethnic minority groups, where African American and Latino students in Catholic schools outperformed their peers in other types of schools. In addition, Coleman found that dropout rates in each SES quartile were lower in Catholic than in other types of schools, and that African American and Latino students dropped out at significantly lower rates than their peers in the other school types.

Valerie Lee and Anthony Bryk (Bryk, Lee, and Holland 1993) examined the structure of Catholic as compared to other types of schools. Their study of tracking found significantly more students in aca-

ademic tracks in Catholic than public schools (43 percent vs. 23 percent). Further, relative to public schools, student background characteristics, such as race and single parenting, were less related to track placement in Catholic schools. The relationship between educational aspirations and track placement was also stronger in Catholic than public schools. That is, 71 percent of Catholic school eighth graders had plans to attend college; 72 percent were in the academic track by the tenth grade. The parallel correspondence for public school students was 53 percent with college plans in eighth grade against 38 percent enrolled in the academic track by the tenth grade.

Interestingly, the college aspirations of Catholic school students are less likely to deteriorate over the high school years than those of public school students. In addition, Catholic school students who transferred to public schools were less likely to remain in the academic track than if they had stayed in the Catholic school system. Most compelling are the findings having to do with differences in curricula. In Catholic schools, students in the general track took an additional year of math and six months more of foreign language instruction than did general students in public schools. Catholic school students in the vocational track took one year more of math than public school students in the vocational track.

Research on the achievement beliefs of Catholic and public elementary school students has suggested that there may be a motivational as well as academic benefit to Catholic school enrollment. In a survey study of a diverse group of low-income fifth and sixth graders, Janine Bempechat found that African American Catholic school students, relative to their public school peers, endorsed attributions for success and failure that are more conducive to achievement (Bempechat, Drago-Severson, and Boulay 2002). Latino and African American Catholic school students were less likely to attribute success in mathematics to external factors, Latino Catholic school students were more likely to attribute success to ability, and African American Catholic school students were less likely to attribute failure to external factors. These findings suggest that Catholic schools may be fostering a sense of self-efficacy and personal responsibility, both of which, as we have seen earlier in this chapter, are strongly associated with school success.

How do Catholic schools, which typically oper-

ate on a budget that is less than one-third that of public schools, achieve these outcomes? The accumulated evidence suggests that a teaching philosophy that stresses the belief that all children can learn, an organizational structure that fosters teacher accountability through a clearly articulated mission (preparing children for post-secondary schooling), and a central curriculum in which few distinctions are made between students all operate to encourage high achievement (Gamoran 1987; Hill, Foster, and Gendler 1990; Keith and Page 1985).

Notwithstanding these positive findings, the apparent benefits of Catholic schooling are not without controversy. The main issue is that of self-selection. There is always the possibility that low-income parents and parents of color who choose to send their children to Catholic schools may differ in fundamental ways from parents who do not make this choice. They may be wealthier, more highly educated, and more involved in their children's schooling, with the possible result that their children may be more motivated (Goldberger and Cain 1982; McPartland and McDill 1982; Salganik and Karweit 1982). This concern has captured the attention of educational economists interested in the broader issues surrounding school reform, of which school choice is a major issue. Recent research using the HSB database suggests that self-selection may not be as much of a concern as has been suggested. Sophisticated statistical modeling techniques have provided evidence for negative selection. In other words, urban Catholic schools are more likely to select below-average, not above-average, ability students (Sander 1996).

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FUTURE DIRECTIONS IN ACHIEVEMENT MOTIVATION RESEARCH

Two primary challenges face researchers who study achievement motivation today. The first is that of integrating ethnicity and culture in theory and research. Much of the available research on children's achievement beliefs and behaviors remains limited

to samples of students who are largely white, suburban, and middle class. In a society that is increasingly diverse, findings that emanate from research on "majority" children are less likely to be applicable in urban classrooms serving the educational needs of low-income students of color. Research programs that focus on academic success in low-income students of color will provide us with insights that can help teachers in their work.

Further, with increasing globalization has come a need to better understand how culture influences child rearing and educational socialization. While we have much to learn from the success of other nations, our tendency to engage in national hand wringing over American underachievement needs to give way to educational reform efforts that will strengthen our schools, support our teachers, and demand the best from our students.

The second challenge is one of methodology. Researchers need to make more use of qualitative methods of inquiry that can deepen our understanding of findings that emanate from surveys and experimental studies. This will allow us to better help teachers, who work hard every day to foster a love of learning in their students. More specifically, a focus on meaning making allows us to uncover the variability in how students make meaning of their educational experiences. While it is helpful to know that some children think of ability as limited and others view it as malleable, how do children articulate their views on this? When given the opportunity to speak about their beliefs, we found that "entity" students (identified through a questionnaire) all spoke about their abilities in very incremental ways, and articulated strategies that they fall back on when they experience difficulty in school (Quihuis et al. 2002). This does not invalidate questionnaire studies as much as it provides nuance and depth to our understanding of the relationship between achievement beliefs and behaviors.

As demonstrated by the recent and ongoing research programs described in this chapter, such as that of Gallimore and Goldenberg (2001), the field is indeed beginning to embrace mixed methods of inquiry. These research efforts will allow us, ultimately, to provide children with learning environments that will foster motivation and a lifelong love of learning.

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III

LEVELS IN EDUCATIONAL PRACTICE

EARLY CHILDHOOD EDUCATION

In the field of early childhood, both competent care and effective education have long been regarded as essential to the intellectual, social/emotional, and physical development of infants and young children. When babies and young children feel the comfort that comes from depending on and trusting their adult caretakers, they are prepared to engage in effective cognitive and social learning. Conversely, the stimulation that comes from interesting learning materials and social interactions is only truly successful if emotional needs are first met. Thus, care and education in early childhood are intertwined when childcare centers contain some sort of educational program, and educational facilities include a focus on nurturing children's safety and comfort. In this discussion of early education, it is assumed throughout that care is an essential component.

The wisdom of this intertwining of early education and care has been validated, in recent years, by major advances in brain research. The importance of nurturing care is shown by the finding that stress and fear affect the brain's normal circuits and inhibit competent learning. The importance of intellectual stimulation is demonstrated by the finding that learning most easily takes place and has the longest lasting impact if engaged in during the early years. It is then that the brain's neurons are most ready to become more specialized and myelin sheaths begin to wrap themselves around the brain's axons, permitting information to move much more rapidly and easily. These periods of learning opportunity have been observed for many years and have been called "windows of opportunity," "sensitive periods," or "critical periods." Now, brain research has begun to show the physiological reasons such periods exist.

INFLUENTIAL PHILOSOPHERS AND EDUCATORS

Long before today's brain research demonstrated ways in which intellect develops in infants and young children, there were philosophers and educators who observed and intuited the unfolding that is now being proved. In the seventeenth century, John Comenius (1592–1670) (Jan Komensky in the original Czech) wrote about the necessity of concrete experiences for younger children and the importance of delaying abstract studies until later. For example, he argued that the study of history should begin with the here and now and the study of science with neighborhood nature (Comenius 1896).

Although Comenius has been largely forgotten today, two of his European contemporaries have not been, perhaps because they also influenced the world of politics. The Englishman John Locke (1632–1704) wrote that infants arrive in the world as blank slates or empty cabinets, ready to understand their worlds through the education they then receive from the adults around them. Like Comenius, Locke believed that younger children should learn by acting on concrete materials. He also argued for careful education of not just the intellect, but also of the social and physical aspects of a child (Locke 1964).

Jean-Jacques Rousseau (1712–1778), born in Switzerland a generation after Locke and Comenius, created his influential writings only after moving to France in his early adulthood. Rejecting the blank slate concept, Rousseau argued that infants are born naturally good. Like acorns that grow into healthy oaks given enough water and sunlight, children are preprogrammed for adulthood and simply need an education that will nurture their growth. Thus, the best education involves keeping children away from the evil influences of society as long as possible. It should be a "natural" education that keeps children

outdoors and doesn't push academics at an early age (see Compayre 1907).

Although both Locke and Rousseau promoted the idea of concrete learning materials, Locke conceived of them as having right and wrong answers (e.g., dice for learning math facts) while Rousseau preferred open-ended materials (e.g., sticks gathered outdoors to be used in many different ways). The two also shared a focus on males of the upper classes. Locke wrote about the education necessary to create "gentlemen," in part because he originally created his ideas for the young son of an upper-class cousin. In addition, although he talked of blank slates and empty cabinets, it was apparent to him that all slates and cabinets were not created of equal quality or expense. It was important that education should be appropriate to the life a child led, and could be expected to lead. Rousseau believed it more natural that children should be educated to take their expected place in their own class. For both men then, it was not necessary to provide literacy education to the lower classes who didn't need it. Further, the emphasis of academic education should be on males. Rousseau was especially effusive in his writings about the education of young girls who should be trained to make life as pleasant as possible for the young men they would marry.

The influence these two early thinkers have traditionally had on early childhood education and care is surprisingly extensive. It was they, apparently, who gave birth to the conflict between nature and nurture in the longstanding debates about the ways in which young children best and most naturally develop. Locke's view of the infant as a blank slate, as well as his contention that the character of fully grown men was more determined by their education than by the abilities they had been born with, led to the philosophy that nurture was the critical influence on successful development. Conversely, Rousseau's vision of the child as a naturally unfolding plant, born naturally good and ready to remain so, led to the philosophy that nature is more important.

A second influence has been on methods of, and goals for, teaching. Locke, with his more intrusive approach, focused on the products of learning experiences, such as learning math facts through playing with dice, as noted above. Rousseau, with his more hands-off approach to teaching, was more interested in process, so that the experience of gathering sticks

that might (or might not) lead to math discoveries, could itself provide all the learning the child needed. Even today, philosophers, theorists, and educators are often attracted to one or the other of these views.

It was in the nineteenth century that the kindergarten was invented by Friedrich Froebel (1782–1852), a German who read Rousseau and agreed that an education natural to young children, and one that took into account the wonders of nature itself, was the appropriate one. His approach was more structured than the one Rousseau suggested, and he was more protective of young children as they interacted with nature. Froebel created the kindergarten for children between the ages of three and five, and he viewed it as a safe, happy stepping stone between the haven of home and the larger world of the school. For infants as well as young children, Froebel created toys (called gifts and occupations) that contained more of the structure proposed by Locke than the open-ended approach preferred by Rousseau. Teachers were trained to present and direct the use of these materials in very precise fashion and the children were gently encouraged to follow instructions. One material, for example, was a small box of blocks in assorted rectangular shapes. Children did not play with these in a freeform way, but created varying designs with the help of teacher instructions and grid patterns cut into their tabletops. To Froebel, such activities constituted play, although they would not meet today's definition of play as something more freely chosen and directed by the child.

The twentieth century provided new views of the child that have given rise to the most modern methods of teaching. John Dewey (1859–1952) was one of those directly responsible for the demise of Froebel-style kindergartens. Primarily a philosopher with interests in education, Dewey was especially devoted to making learning real, authentic, and immediate for children. At the University of Chicago he was instrumental in creating a laboratory school that included, not a kindergarten, but a "subprimary" class. Viewing Froebel's ideas as rigid and outdated, but needing to somehow align himself with them to avoid alienating kindergarten teachers, Dewey chose to reinterpret those ideas. For example, he readily agreed with Froebel that children needed to play and that blocks provided an effective material for that purpose. Froebel blocks were actually included in the laboratory school, but there were no tables with

grids or predetermined constructions to be made with them. Instead, the blocks were played with freely and creatively.

Every class in the laboratory school was considered a small, democratic society and the children worked and played together to help create it successfully. In the subprimary class, the children studied their homes and families, then moved outward to learn about the local community. In warm weather, nature studies and walks in the neighborhood expanded their learning, but the focus was still on the here and now (Dewey 1990).

Dewey's ideas about education and democracy began to spread nationally, but over time they were watered down so that children became engaged in plenty of activities but not much learning. When, in the 1950s, the Russians demonstrated their scientific knowledge by arriving first in space, Dewey's ideas were blamed and removed, temporarily at least, from American educational favor. Examples of the long-term influence of Dewey's thinking on early education can still be seen in two New York City schools started by two young, idealistic teachers just prior to World War I. The first began as the Bureau of Educational Experiments with a small nursery school created as a laboratory for newly emerging ideas on early education. This later became the Bank Street School, which still exists as a demonstration school at the Bank Street College of Education. Lucy Sprague Mitchell, who had been the first dean of women at the University of California at Berkeley, was its founder. Caroline Pratt, equally interested in moving education in new directions, founded the City and Country School close by for somewhat older children. It too still functions along lines inspired by Dewey. It was the hope of both women that providing open-ended, child-centered education coupled with democratic views would make for a more democratic and cooperative world (see Seefeldt 1997).

Other influences on early education in the twentieth century came from two men, both born in the late nineteenth century, one in Switzerland (Jean Piaget) the other in Russia (Lev Vygotsky). They were in agreement that the infant's biological heritage was important, but so was the environment, and the way in which the two interacted was essential for development. To this interaction they each added another element, different from each other's, but complementary.

Jean Piaget (1896–1980), based on studying the results of intelligence tests taken by children and on close observation of young children themselves, concluded that humans essentially construct their own knowledge. Because he believed this happens as a result of the interaction between the biology children are born with and the environment provided them, his theory has often been called interactionism (see Piaget 1972). In most recent years, more emphasis has been put on the self-construction that takes place because of the interaction, and the theory is most often referred to as constructivism. Piaget's studies were principally in biology and psychology, but he eventually applied his ideas and findings to the field of education. In this, he concluded that the most effective learning takes place when children are minimally and skillfully guided rather than directly taught. Infants and young children can be provided with toys and other materials that are appropriate to their stage of development. As the children interact with these, adults might present more complex materials or ask questions that lead to further exploration and learning. Thus, as children continue to "operate" on the materials in their environment, and give continually deeper and wider thought to what they are doing, they construct their own knowledge.

Piaget's theory might be said to be socially constructed to the extent that it was, in part, a reflection of the democratic, individualistic Swiss society in which he lived. On the other hand, Lev Vygotsky (1896–1934) developed a theory of constructivism more suited to the emerging Marxist state in which he lived. He too observed the interaction between biology and environment in young children's development, but argued that optimal growth comes not so much from children's individual efforts as from social interactions with their "collective." As children are exposed to ideas just a bit more sophisticated or adequate than their own, they add to their knowledge. This step forward in cognitive understanding was called by Vygotsky the Zone of Proximal Development, and it would be the teacher's responsibility to understand each child well enough to provide learning within that zone (see Vygotsky 1962).

A comparison of Piaget's and Vygotsky's ideas is important to the understanding of early childhood education in much of the world today. They themselves never communicated although born in the same

year and inspired by many of the same motives and interests.

One of Piaget's major contributions to the understanding of child development was his complex theory of cognitive development. In addition, he posited a general theory of social/moral development that has since been expanded on by other researchers. These complementary theories describe children from birth when they have yet to see themselves as separate from their mothers, on through the egocentrism of the preschool years and into an increasing understanding of the world, and their place in it, during elementary and secondary school. Although Piaget did not speak of a zone of proximal development, he did aver that if children were exposed to thinking at a slightly more advanced level they would respond to it and increase their cognitive or moral understanding. Likewise, if the thinking presented to them was too far advanced, the children would not respond at all. This was Vygotsky's point as well.

How to get children to the next stage or zone, however, was a question that was answered differently by each theorist. Piaget's preference, which points to his individualistic thinking, was to let children explore on their own, with occasional input from the more knowledgeable teacher. Vygotsky, however, believed that the teacher should lead children into their explorations. This concept, later called scaffolding by followers of Vygotsky's ideas, has emerged, in early childhood education, as a popular counterbalance to the Piagetian approach.

A final point of comparison should be made in regard to the young child's development of language and its relation to cognition. Piaget's view was that intellect could develop without the use of language; therefore language development follows from intellectual development. Vygotsky held an opposing view that the use of language could actually help in the development of intellect. Again, these different approaches reflect the thinking that comes from an individualistic theorist versus that of a social theorist.

Both men observed that little children talk to themselves, but their interpretations of this behavior were quite different. To Piaget, such private speech was a clear demonstration of the egocentrism of the early years. Once children learned to consider the thoughts and preferences of others, they would stop talking so much to themselves. To Vygotsky, talking to themselves helped children organize their thoughts and

even regulated their behavior, a habit that would continue even after they became silent. Thus, private speech was not related to communication with others but with the self.

It is true, of course, that there have been many philosophers, theorists, psychologists, and educators who have influenced early childhood education other than those described above. Recent and ongoing brain research may lead the field in entirely new directions. Yet, the nature-versus-nurture debates and the individual-versus-social constructivism theories, along with the attempts to reconcile them all while still placing importance on education for democracy, underlie most current practices in the field. Thus, the following descriptions of today's early education will, at times, refer back to this introduction to history and theory.

This chapter contains five entries. It begins with a description of young children as they are understood today and from perspectives based on the influential historical figures described in the introduction. As the understanding of young children grows, it becomes increasingly necessary to provide them with advocates, and there are several organizations dedicated to this task. They are described in the second entry. This leads to current views about the essential elements of a learning environment for young children, including the characteristics necessary in their teachers. Different views of what curriculum and assessment should be made up the fourth entry and, in the final entry, some current and well-known educational models are described. Although each of these models is theoretically based on what research has told us about how young children learn best, they are sometimes significantly different from each other.

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UNDERSTANDING THE YOUNGEST STUDENTS

The current position of most people in the field is that development in infants and young children should be regarded, not as normal or abnormal, but as typical or atypical, and that this does not lead to two separate groups of children. Instead, there is

more of a continuum or sliding scale. This view of development has definite consequences regarding education in that, as much as possible, children with special needs are included in regular educational settings rather than segregated in special education classrooms. Research has shown that this *inclusive education* approach leads to greater cognitive and social gains for young children with special needs than does segregation. Generally, children with disabilities are placed within specific groups only to determine eligibility for special services.

THEORIES OF EARLY CHILDHOOD DEVELOPMENT

What constitutes typical development and what makes it happen has long been the subject of debate, theory, and research. In the next three entries, the most influential schools of thought are explained, along with their influence on early education.

Maturationist Theories and Developmental Milestones

Early childhood research has led to the creation of certain milestones in development. Pediatricians use these during infants' and young children's check-ups and they also appear in parenting books and the popular press. These milestones tell the average ages, across large numbers of children, at which one might expect to see changes in cognitive, language, or motor development. Although such milestones provide a general set of guidelines, there is still a great deal of variation among children. The baby who walks at nine months is no less typical than the one who crawls until the thirteenth month. Toddlers who speak in complete sentences at age two will probably not sound much different at age six than children who begin talking after their third birthday.

A number of theories that attempt to explain how infants and children develop have evolved over the last century, but they can generally be classified into three basic groups. The first of these has its beginnings in Rousseau's image of children as developing in a natural way based on their inherent qualities and predetermined biological design. Today's versions of his ideas focus on internal biological characteristics as the basis for development. The best-known

twentieth century leader in this first group was Arnold Gesell (1880–1961) whose theory has been called maturationist. It was Gesell who, based on his observations of large numbers of children over many years, first laid out milestones and norms of development. A wide array of tests was used to determine the ages children might be expected to engage in, or improve their skills in, cognitive, social, and physical activities. Following is a brief overview of the norms for one skill: the child's ability to draw a circle at an examiner's request.

- 2 1/2 years: creates a circular scribble
- 3 1/2 years: can start but not finish successfully
- 4 1/2 years: makes an oval, drawn bottom up and clockwise
- 5 1/2 years: draws a lopsided circle, starting at top and moving counterclockwise

Gesell's view was that children could depart from such norms to some extent, but that too wide a divergence in a collection of tests would indicate a lack of readiness for school entry or promotion. One of the educational implications in schools that subscribe to the Gesell philosophy has been to create transitional kindergartens designed to give lagging children an extra year to get ready for the higher rigors of elementary school.

The second group of theorists has focused less on internal biological characteristics and more on the psychological. That the forefront of this approach was Erik Erikson (1902–1994) whose psychoanalytic model was based on his work with Sigmund Freud (1856–1939). Erikson's theory confined itself to emotional development and posited a series of crises that children must resolve at specific stages if they are to become socially and emotionally competent adults. For infants the crisis is identified as trust versus mistrust in which babies must, for example, learn to trust their mothers to feed them and not to drop them. Two- and three-year-olds face a crisis termed *autonomy versus shame and doubt*. Their focus is on things such as toilet training and saying "no" while still knowing that the adults in their lives will keep them from going too far. Initiative versus guilt is the crisis faced by four- and five-year-olds who possess great energy for big projects that may, or may not, get them in trouble, as well as possible obsessions with the opposite sex parent. As

children reach age six, the crisis that will carry them through the elementary years is industry versus inferiority, in which academics, friendships, and physical accomplishments can lead to success or failure in their eyes. Erikson's theory is often relied upon by early childhood teachers to better understand the emotional and social development of the children in their care (Erikson 1963).

Behaviorist Theories and Environmental Influences on Development

The third group of theories approaches development from external, environmental sources, rather than from the internal sources of the first group. The behaviorist theories in this third group have their long-ago roots in the writings of John Locke, who described the minds of infants as blank slates or empty cabinets to be filled by influences from the environment. Twentieth-century environmental theories had their genesis in the work of the Russian psychologist Ivan Pavlov (1878–1958) who conditioned dogs to salivate when they heard a bell ring, first by providing meat along with the sound and later simply creating the sound. John Watson (1849–1936), who studied with Pavlov, took this classical conditioning approach and applied it to infants and parenting practices. He believed that children were better served by discipline and consistent routines than by indulgence and demonstrations of affection (Watson 1928).

B. F. Skinner (1904–1990) took Watson's ideas a step further, observing that a behavior that is reinforced immediately is likely to be repeated; if it is ignored, it will generally disappear. The behaviorist orientation includes concepts related to reinforcement. Positive reinforcement, which might include such rewards as toys, praise, or hugs, is used to increase the frequency of desired behaviors. Negative reinforcement, which refers to something being taken away, can be observed when a misbehaving child is first required to sit between two children he doesn't prefer and then, when his behavior improves, is allowed to move where he would like. Punishment also figures into behaviorism, but Skinner and others have been opposed to it because of possible side effects such as anger at the punisher and a more likely return to the undesired behavior. Nonreinforcement is the term that describes the

ignoring of behavior. It can work if, for example, a child is behaving badly in order to get attention, then stops when none is given. Skinner's behaviorist ideas have long been put into practice in childcare centers, schools, and in homes, and are termed behavior modification (Skinner 1968).

A final mention in this group is Albert Bandura (1925–) whose social learning theory is based, to great extent, on the concept of modeling. His studies showed that young children who observed aggressive behavior became more likely themselves to behave aggressively. These studies also demonstrated that it is not always necessary to schedule immediate reinforcement since there was often significant delay between the modeling of the aggressive behavior and the children's imitation of it.

Constructivist Theories and Stage Development

The third group of theories base themselves on both the maturationist and behaviorist views of development, and is generally referred to as interactionist. Theorists in this group believe that each of the two preceding theories has something to offer but is not complete in itself since both biology and environment must be considered. In the introduction to this chapter, the two most important contributors to interactionist theories, Jean Piaget and Lev Vygotsky, were described along with their views. In this entry, the cognitive and social/moral stages posited by Piaget will be explained, along with the educational implications of each. Movement from one stage to the next occurs over many experiences and Piaget provided several concepts to explain what happens. He said that humans who are in the process of learning experience a kind of disequilibrium because they are provided new information that doesn't match with the knowledge they had previously. If the new information is very discrepant, then their mental structures must accommodate the input to deal with it. If it is only partially new, they engage in the relatively easier *assimilation* in which previous knowledge is simply refined. As an example, if infants are given a "sippy cup" to drink from and have previously had access only to their mothers' breasts, their comprehension must accommodate this totally new form of getting nourishment—a truly big leap. If, on the other hand, they are provided with a bottle as a step away

from the mothers' breasts, the experience will be new but the use of a nipple will be familiar and only assimilation is necessary. In most of life, both accommodation and assimilation go on continually and frequently simultaneously. The following descriptions of the Piagetian stages cover the major events in development. In actuality, there are sub-stages as well, making a more complex series than the summary that appears here.

Sensorimotor cognition describes the earliest stage, which begins at birth and continues for about a year and a half to two years. Sensory information and motor activity interact at this stage to help infants learn about their surroundings. Sensory stimulation coupled with the opportunity to move provide infants with the best education. For example, crib mobiles that are tied to infants' wrists will move in a variety of patterns as the infants kick and wave their arms. Just as it is possible to deprive infants of sufficient stimulation for cognitive and physical growth, so it can happen that too much is provided. A confusion of colors, noise-making toys, and intervening caretakers can cause infants to seek out more restful areas to look at.

Preoperational cognition begins as youngsters begin to use language and toddle, no longer needing concrete, immediate actions to learn about their worlds. The stage continues for about four years, until such time as they are ready for school. Learning at this stage is egocentric, that is, toddlers and preschoolers see the world from their own points of view, not understanding that others might see the world differently. As related to cognitive development, they might, for example, not understand that a board game looks different to people sitting on the other side. They would also not understand that the others playing the game with them lack the joy they feel when they are winning. Thus, the egocentrism children feel at this stage is both cognitive and social/moral. Teachers of toddlers and preschoolers typically avoid competitive games, focusing instead on activities where everyone can win.

An important development at this stage is the symbolic use of language in conjunction with representational thought. Objects now have names that are pronounced more or less in the adult fashion, and one object can represent another (e.g., a cooking pot might be used as a firefighter's helmet.) By the end of the stage, most children possess the core grammar

of their native language, and possibly another if they live in a bilingual home. Representational play behaviors typically develop into full-fledged dramatic play. Teachers know to provide many informal language experiences as well as materials and opportunities for dramatic play that reflect children's real worlds. The symbolic representations that children become capable of at this stage, along with other skills such as sequencing and classification, make first steps toward reading and writing possible. Efforts by teachers to enhance these emerging skills are typically informal, primarily introducing children to concepts of print, left-to-right reading, spaces between words, and so on.

Toward the end of kindergarten, preschoolers' characteristics tend to fade and be replaced by the Piagetian stage that will take them all the way through elementary school: concrete operations. Children now have an easier time seeing both physical and social situations from viewpoints other than their own. A higher level of understanding of symbolic representation makes learning to read much easier. Increased skills in classification, sequencing, and regrouping make it possible to teach school mathematics. Because children's core grammar is complete, the more formal school grammar can be introduced.

SUMMARY OF THEORIES AND THEIR INFLUENCE ON EARLY EDUCATION

All of these advances, however, do come with limitations. Children in the early grades are still focused on the here and now, the objects they can readily see, touch, and feel and, in general, the physical attributes of the world around them. They are also inclined to focus on a single physical attribute at any given time, making complex and abstract concepts too difficult for them. In the primary grades, teachers are careful to include many "hands-on" materials that can be manipulated for greater understanding.

In summary, it may be said that theorists and philosophers have been positing stages of development since Rousseau in the eighteenth century, while educators and caregivers then attempt to find ways to apply these concepts to better serve their children. It may also be said that, although the various stage theories might seem on the surface to be independent of each other, they can often be intertwined to achieve

a fuller understanding of young children. As an example, Gesell's vision of the four-year-old was of a child full of exuberance, enthusiasm, energy, and a tendency to take behavior out of bounds. Erikson described the crisis at this age as one of initiative versus guilt, that is, having enthusiasm for taking on big projects while dealing with feelings of guilt about misbehavior. From Piaget's perspective, the four-year-old was egocentric, seeing the world from a self-view. This can lead to difficult social interactions when the four-year-old misbehaves and isn't capable of understanding why others don't see things the same way. Thus, while Gesell, Erikson, and Piaget created quite different stage theories, they are in many ways compatible.

In addition, the different domains of development that each theorist studied are intertwined, each one affecting the other in some way. Vygotsky worried about this when he observed the difficulties deaf children had in participating in group activities that would not only enhance social development but cognitive understandings as well. Piaget's own research indicated that, while cognitive development can outstrip social/moral development, it does not work the other way around. In other words, children need a cognitive capacity to understand and explain their ethical decisionmaking. Other examples include the importance of language development to children's social interactions, and increasing physical mobility as important to infants' and toddlers' growing understanding of their physical environments.

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SUPPORTING ORGANIZATIONS

National and international organizations have been important to the health, continuity, and growing acceptance of early childhood as a vital stage in education. There are three in particular that have forwarded, and continue to champion, the cause of education for infants and young children.

The largest and best known of these is the National Association for the Education of Young Children (NAEYC). This organization was begun in 1926 as the National Association of Nursery Educators

(NANE, pronounced "nanny.") As NAEYC, it now focuses on children from birth to age eight. Most members are childcare workers, center directors, teachers, college faculty, or parents. Annual conferences are some of the largest pertaining to education. In recent years, a primary contribution of NAEYC has been its publication of a number of influential position papers. In the 1980s, early childhood professionals, dismayed by the national tendency to water down elementary curriculum for young children as a part of the so-called back-to-basics movement, determined to make curriculum and pedagogy more developmentally appropriate. To that end, *Young Children*, the official journal of NAEYC began to publish position papers laying out the most up-to-date perspectives on early development and the kinds of learning that would and would not be appropriate in centers and classrooms. In 1987, the organization's landmark book, *Developmentally Appropriate Practice in Early Childhood Programs* was published, with input and approval from other related organizations. In the book, position statements were made and then expanded upon to describe, very explicitly, appropriate and inappropriate ways to treat and teach young children. Presentations at conferences were used to expand and explain further. Readers of the book and attendees at the conferences came away well-informed, and returned to their centers and classrooms with the knowledge that their largest early education organization backed their use of what had come to be known as developmentally appropriate practices, or "DAP." To a great extent, the back-to-basics movement was averted in early childhood education and curriculum appropriate to young children became more the norm. Ten years later, a revision of the book was published and it too is widely used across many kinds of sites (see Bredekamp and Copple 1997). NAEYC also instituted a set of standards for early childhood postsecondary programs as well as a procedure by which individual centers can become accredited by the organization. In addition to *Young Children*, NAEYC publishes a research journal and an extensive collection of books for teachers. It is headquartered in Washington, D. C.

A second organization, the Association for Childhood Education International (ACEI) began as the International Kindergarten Union (IKU) in 1892,

and then joined with the National Council of Primary Education in 1931 to become the Association for Childhood Education International. From the beginning, its inclusion of an international element was a way of signaling its interests in children worldwide. It was also active, in the late 1940s, with helping young children in the postwar reconstruction of Europe. Like NAEYC, ACEI creates position papers, some of them focused on early education and care. Like NAEYC, it holds annual conferences where teachers can share and receive new ideas for working with children. It too publishes a journal, *Childhood Education*, a research journal, and a number of books. It is headquartered in Olney, Maryland.

The Organization Mondiale pour l'Éducation Préscolaire (OMEP) is the most international of the three organizations. In the United States, OMEP is usually referred to as the World Organization for Early Childhood Education. Representatives from several European countries began it in 1946 (see *Global Guidelines from an International Symposium*). Its first international conference and official founding in 1948 included representatives from nineteen countries from around the world. It has expanded since then to more than sixty nations and has maintained close ties to UNICEF, UNESCO, and the Council of Europe. Members are dedicated to sharing information about and supporting the well-being of children throughout the world. In particular, the organization has been active in cross-nation help for children in distress or high need. In addition, OMEP has been closely linked to support of *The Convention on the Rights of the Child*, an international document that lays out the rights children should have within their families, cultures, and countries. A few of these rights include: survival and development, an adequate standard of living, effective health services, childcare services and facilities, and no discrimination due to such things as race, sex, or religion. (The United States is one of two countries that has refused to sign the document, finding several politically controversial points.) Like the other two organizations, OMEP publishes a journal, the *International Journal of Early Childhood*. Copies of *The Convention on the Rights of the Child* are also available from OMEP.

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ESSENTIAL ELEMENTS OF THE SETTING

The environment of a childcare center or school is not just physical but social and emotional as well. As such, it includes the impact of adults on children's learning and well-being. All of these elements are discussed here.

THE PHYSICAL ENVIRONMENT: INDOORS

The first element essential to the early childhood setting is the physical environment. A major reason for this is safety, given the helplessness of infants and the awkwardness of toddlers, preschoolers, and even to some extent primary-age children. A second reason to focus first on the physical setting relates to the methods by which young children learn. Infants learn almost exclusively through their senses and physical movement. Even through the primary grades, hands-on materials are essential to learning. A final reason for a focus on the physical environment is the necessity of somehow coordinating two essentials that are inherently in conflict: provision of physical safety and, as well, a developmentally stimulating environment. The latter assumes the need for young children to be mobile and follow their curiosity, while the former would seem to negate such behavior.

Nevertheless, the need to coordinate safety with curiosity and mobility has been recognized internationally and officially. A 1999 international symposium sponsored by the Organization Mondiale pour l'Éducation Préscolaire (OMEP) and the Association for Childhood Education International produced a document in which an environment both safe and stimulating was described as essential. A safe environment, according to this document, includes: freedom from physical hazards including unsafe equipment, pollution, and violence; basic sanitation, including safe and nutritious food and potable water; and clean and well-maintained equipment and physical structure. To be developmentally stimulating, the environment should include opportunities for: frequent and positive child-child and child-adult interactions; engaging in active play and

movement; playing, exploring, and discovering; thinking critically and creatively through using an abundance of materials; playing outdoors on equipment that provides a variety of movement possibilities; and extending play to include constructions, gardening, natural habitats, and walking paths. In general, the environment should be aesthetically pleasing and attractive to children with a variety of colors, textures, surfaces, visual dimensions, and perspectives. However, this environment should not be static, but evolve over time with children (who are old enough) invited to participate in its creation and organization.

When infants are provided with opportunities to learn to crawl, interact with mobiles, or explore toys with all their senses, the environment is providing stimulation. Safety is provided when crawling surfaces are soft, mobiles are kept out of reach, and toys are washed after each child's use. Toddlers need room to run as well as walk, to choose toys on their own, and learn to get on and off furniture. Safety for this age includes open spaces with non-slip rugs or shock-absorbent tiles, low shelving with an uncluttered collection of toys, and furniture that is free of protruding metal parts and sharp corners. Preschool and kindergarten children can engage their curiosity in a widening array of activities not safe for infants and toddlers. They ride tricycles; throw and catch balls; add jumping, balancing, hopping, and skipping to their increasingly competent walking and running; develop their fine motor skills with puzzles, bead stringing, woodworking, cutting and pasting, and small blocks; and learn about books and reading through many preliteracy and literacy activities. Safety for these ages is provided when climbing equipment is regularly checked for stability and good repair, use of scissors and woodworking materials is introduced with instructions and rules, and active experiences are monitored by adults. By the primary grades, safety is not as much of an issue, but equipment must still be kept safe and instructions and rules must accompany the use of potentially dangerous materials. It might be said that the main concern with infants is their total safety while, in the primary grades, the situation reverses and the main concern becomes the provision of a stimulating environment that encourages and promotes children's intellectual curiosity. At both ends of development, however, both safety and stimulation remain important.

Other aspects of the physical environment include the building's structure; colors of walls and furniture; arrangement of furniture and materials; the amount of space; décor, including children's art work, teachers' charts, posters, and signage; and outdoor facilities.

Each of these physical elements will vary depending on the ages of the children served. While children in public primary grades can expect an institutional setting, buildings for infants and the youngest children are generally as homelike as possible; indeed, they are often actually homes. Colors of walls and furniture may be determined by a central office but, if not, modern color theory may come into play. For example, a vibrant red may be appropriate for large motor activities, but the more calming yellow, purple, or green are preferred for nap and other quiet areas. Indoor space is divided, in part, by the necessities of the space provided. With that as a given, there are generally fewer divisions for infants and toddlers, with simple arrangements remaining stable over time due to the need, at this age, for stability. More divisions and greater flexibility are possible in rooms for older children, who generally enjoy change. Divisions may be created by using moveable walls or, more commonly, by arranging furniture such as bookshelves to create barriers. Decisions about divisions are influenced by spaces that will have activities that will be wet or dry, quiet or noisy. Nap areas, for example, are not placed next to block building or dramatic play. Messy art activities are placed next to a water source. Reading corners are found in quiet sections. Once the room has been divided, decisions are made about the décor. For infants and toddlers, pictures or murals are placed on walls both at their crawling, toddling level and at the adult level for times when children are being held. Colors are vivid, designs simple and straightforward. Preschoolers and older children respond well to prints of gallery artwork placed at eye level. Teachers of children who are learning to read typically include posters that require some basic literacy. Finally, the furniture itself is of importance. Shelves are generally open and at child height so that children learn responsibility and decisionmaking when they choose materials and replace them correctly. Toddler rooms typically have fewer shelves containing a small array of choices, with these becoming more complex as children get older. Younger children are typically

provided with small chairs and tables; primary grades may have tables and chairs as well, or they may have desks. At all ages, safety is important, with greater measures necessary for infants, toddlers, and younger children.

THE PHYSICAL ENVIRONMENT: OUTDOORS

In the mid-nineteenth century, the Froebel kindergarten included outdoor experiences that provided children with opportunities to interact with nature as well as to create and care for carefully structured gardens. This balance of nature and cultivation has continued to be featured in many centers and schools down to the present. Added to them has been an increasingly sophisticated approach to outdoor play equipment. For the youngest children and toddlers, materials tend to be flexible in their uses. A house-like play structure, for example, might be used for any number of dramatic play scenarios. Loose materials often include tricycles, wagons, toy trucks and cars, and blocks. Smaller toys are frequently made a part of sandbox play. Climbing and swinging equipment is appropriately sized. The ground surface may be pea gravel for preschoolers due to its soft landing attributes. For toddlers, however, concerns about what may go into their mouths makes a grass lawn more attractive.

Kindergarten and primary grade play areas typically contain more traditional playground equipment that includes swinging, sliding, and climbing pieces. So-called adventure playgrounds that provide building materials and tools, to be used under adult supervision, were widely popular in the late twentieth century, but are less commonly seen today.

THE SOCIAL-EMOTIONAL ENVIRONMENT

The social-emotional environment of the center or school is as important as the more visible physical environment. Children's developmental characteristics at different ages must be taken into consideration as this environment is established. In this entry, the characteristics of each age are coupled with a description of the appropriate social-emotional environment.

Early sensory experiences and interactions with

others, primarily adults, provide infants with the stimulation necessary for early brain development. In addition, it is currently believed that the same interactions foster neural connections that relate to emotional control. Environmental conditions that inspire emotional reactions in infants include feelings of comfort and discomfort, predictable routines or lack of them, and interactions with family members and strangers. Social and emotional behaviors become increasingly complex in the infant's first year as behaviors such as smiling, laughing, and engaging in different sorts of crying appropriate to the occasion evolve. Frustration or anger can result not only in crying but screaming, head banging, or throwing toys.

Knowledgeable infant caregivers react to such behaviors in positive ways, not regarding them as punishable. Rather, infants are redirected toward less frustrating activities, are made more comfortable, perhaps by a diaper change or between-meals snack, or are simply held for a while. According to the theories of Erik Erikson (1963), the important emotional development at this stage is one of trust. Because infants are totally dependent on their caretakers for their safety and general survival, the self-confidence that comes with total trust is essential for emotionally healthy entry into toddlerhood.

Toddlers demonstrate an increasing sense of self when they not only recognize themselves in mirrors but in photographs as well. Further, they can refer to themselves by name. The physical separation from caretakers that is now possible because of the development of self-feeding and walking skills provides an additional contribution to the sense of personal identity. As toddlers develop a sense of themselves they also become capable of more differentiated emotions, expressing fear, doubt, jealousy, even hatred. To these is added the hallmark attitude of this age: independent decisionmaking or, as Erik Erikson would have it, autonomy. The development of independent thought leads inevitably to occasional differences of opinion, expressed by even the most nonverbal toddler as a simple but adamant "no." Possession of desirable toys can be important as well, giving rise to a second critical word in the toddler's vocabulary: "mine." As toddlers focus on their increasing sense of identity and the importance of their own needs, they also take the first steps toward learning about the social world. As defined by Jean Piaget, the social stage

of toddlers is one of great egocentrism since it is necessary to understand oneself before it is possible to understand the needs of others. Thus, when the toddler declares that a toy is “mine” and grabs it from another child, it is not so much selfishness talking and snatching, as it is a lack of knowledge about what the other child thinks or needs.

Caregivers of toddlers continue the approach of the earlier stage in which babies are not punished, but are redirected to other activities and materials. As in infancy, physical comforting may also be necessary; although toddlers desire autonomy, they still have a strong attachment to their caregivers and depend on them for safety and unconditional affection. Because of the need for close and attentive adult care, there are typically state laws requiring high adult-to-child ratios. The social atmosphere of a childcare center for toddlers is one in which newly mobile babies can play individually if they prefer, while occasionally and briefly interacting with their peers. There are enough of the most desirable toys to go around, thus avoiding conflict. Shelves are low to the ground so that toddlers can independently choose what they will play with. The numbers of choices are limited to ward off frustration and feelings of being overwhelmed.

Younger preschoolers still possess most of the social and emotional traits of toddlers but, by the age of about four, have begun to take on new characteristics. Erik Erikson saw this age as one in which there is great energy and initiative. Awkwardness may accompany new endeavors and mistakes may be made, but stores of energy and enthusiasm for new initiatives typically impel children to leave the negative experiences behind and focus on new ones. As at the toddler stage, independence is important, but the four- and five-year-old's increased understanding of how the world works makes it feasible to move beyond the temperamental “no” and understand simple explanations.

Socially, according to Jean Piaget, preschoolers and kindergarteners are still, to great extent, egocentric, but they are beginning to understand that others may have different points of view. Still, their egocentrism typically prevents them, in a tense social situation, from acting toward anyone's advantage but their own. Further, their own emotional and social egocentrism often impels children to mentally transfer what they want to the thoughts of others. “I hit him because he wanted to be hit” is a statement that can sound quite

logical to a four-year-old and occasionally justifiable to the five-year-old. Children at this stage, as they contemplate their social interactions, focus on physical attributes as a way of making decisions. For the four-year-old, sharing can take place, less because of altruism, than because of someone else's greater size or perceived attractiveness. Five-year-olds, who are learning math concepts such as classification, believe that the only fair way to share is for everyone to have exactly the same, no matter what the situation.

Preschool and kindergarten teachers continue, as in the toddler years, to offer nonsocial, individualized experiences to these children who are in the beginning stages of understanding social interactions and the views of others. At the same time, well-supported group activities become an increasing focus. Because continued egocentrism makes competitive experiences highly emotional, games and sports typically do not have winners and losers. Circle games and noncompetitive versions of team sports help young children learn about rules without the trauma of the standard versions.

As children complete kindergarten and enter the primary grades, they also begin a major shift in their social and emotional behavior and understandings, leading to new considerations for the classroom environment. It was Piaget's observation that children of this age begin to acquire an adult understanding of rules. Prior to this age, rules were viewed simply as an extension of an authority figure's power over young children and, therefore, had no truly rational reason for being. Now, however, it is understood that rules are created for the good of the order, that they can be created by many people at various levels of authority, and that if they are found to be defective, rules can be changed. Primary grade children can become intensely interested in rules. They may be especially focused on how well others are obeying the rules, and demonstrate this by extensive tattling.

It is also during the primary grades that children become somewhat less attached to adult caregivers and teachers and more interested in the concerns of their peer group. Friendships create cliques; play times lead to gangs. Through these years, youngsters learn to see issues from others' points of view. Conversely, they wonder how others see them, leading to insecurities and concerns about the effects of their behavior or clothing choices. Taken together, the interest in rules and peer groups fosters the abilities

necessary for learning team sports. Because some of the early childhood ideas about rules, fairness, and authority still persist through the primary grades, both patience and careful teaching are necessary, however.

The explanations of primary-grade social development that come from Piagetian theory are well complemented by Erikson's descriptions of emotional development. Just as children begin to learn the adult definitions of behavior according to rules, so they begin to attain the school tools and skills that will eventually take them into adulthood. Erikson viewed these years as a time of industry, a time between the emotionalism of toddlerhood and puberty, when children are able to focus on their productivity. He saw children at this stage as having persevering diligence and an ability to work alongside and with others.

The implications of these new developments for the classroom environment are several. Furniture may consist of either tables or desks, but typically they are placed so that small groups of children can work together. Children who are not yet ready for or interested in working with others may be placed singly or permitted to work alone as they desire. Teachers also know that, because primary children are only in the beginning stages of group behavior and peer orientation, that there will be times when they must be ready to provide aid, comfort, and guidance on an individual basis.

The interest in and increased understanding of rules is often channeled into the creation of a so-called learning community in which the children themselves help design the social structure of the class. This can include having the children set the rules and also the consequences of breaking them. Academic study groups can, at times, be created by the children with the teacher's help. Social interactions, problems, and dilemmas found in the classroom and on the playground are discussed by the children in class meetings. In general, the atmosphere of a predemocracy can foster the development of children at this stage.

ADULT INFLUENCES ON THE ENVIRONMENT: TEACHERS, AIDES, AND PARENTS

In the school or center, a major contributing factor to a positive or negative environment is the relationship between staff members and children, among staff members themselves, and between staff members and

the children's parents. Infants and young children may not understand the underlying emotions between these relationships, but they intuit them and are affected by them.

A primary characteristic of the effective early childhood teacher is a strong understanding of child development. This includes knowledge of theories related to cognitive growth such as those of Jean Piaget, Lev Vygotsky, and Arnold Gesell; social-emotional theories such as Erik Erikson's; and social learning theories such as Albert Bandura's (1963). Although these theories may at times be somewhat in conflict with each other, effective teachers make practical use of their strengths, applying them to their daily interactions with infants and young children.

Although there is no one personality type that is appropriate for teachers, there are some characteristics that can enhance the teacher-child environment. Understanding of child development should lead to acceptance of children's behavioral stages rather than dismay at some behaviors and an attitude that children are defective adults in need of punishment. The successful teacher is respectful of young children's cognitive capabilities, understanding that, although they are less informed than older children or adults, they are learning more rapidly now than they will at any other time of their lives. Respect for children's learning capabilities leads to the teaching of meaningful activities that children will take seriously, although such experiences may still provide fun, even entertainment. The teacher who both respects children and understands development rejects learning activities that simply "water down" curriculum more suitable to older children and will, instead, focus on what is interesting and appropriate to the age. Finally, the early childhood teacher must be capable of true warmth toward young children and a mature relationship with them. The latter indicates that teachers and caregivers must not bring to the relationship any of their own emotional vulnerabilities, but must focus on the needs of the children.

With all that the care and teaching of infants and young children entail, early childhood education remains an underpaid profession, thus making high turnover of personnel an ongoing problem. Unfortunately, it is at the earliest stages of life when stability in relationships is most essential. Thus, one more characteristic important to early childhood professionals is dedication.

One way to support the important work of teachers is to provide them with the help of other adults. In the United States, modern-day teaching assistants or aides were first used in Michigan in the 1950s. On a nationwide scale, they came into being in the 1960s through President Lyndon Johnson's "War on Poverty" and the establishment of Head Start preschools for economically disadvantaged children. The idea was that teachers could do a more effective job if they were less burdened with nonteaching duties and that these could be taken over by unemployed men and women who were frequently from minority groups.

Today, within one classroom or infant room, the number of adults present is generally prescribed by state and/or local law. In the preprimary years, there is almost always at least one assistant for each teacher. The assistant typically engages in environmental tasks (decorating bulletin boards, keeping supplies on hand, collecting lunch money, setting up for lunch), or supervisory tasks (leading the group to the playground or assemblies, monitoring outdoor play, watching over the class as a whole while the teacher works with a small group), or even instructional duties (reading a story to the class or a small group, listening to children read, team teaching a lesson.) At times, young children become as attached to the assistant as to the teacher, thus emphasizing the importance of between-adult harmony. Training the assistant to engage successfully in the desired activities becomes a critical duty for the teacher in charge.

In addition to teaching assistants, parents can provide teachers with help. Today's parent involvement with school and center has its origins in the "free kindergarten" movement of the mid-nineteenth century. Wealthy philanthropists donated their efforts toward creating kindergartens for the children of the growing population of immigrants. In part, these were to introduce children and their parents to the American way of life and, thus, contained educational programs for both generations. Parents were instructed in literacy and parenting and provided with advice on finding jobs. Children were given an education largely based on the philosophies of Friedrich Froebel.

By the start of the twentieth century, kindergartens nationwide were increasingly housed in public schools and the parent education component not so automatically included. This was more likely to be structured through the newly emerging parent teacher

associations (PTAs). By mid-century, the rise of parent cooperative schools would again involve parents more directly but, by definition, from a more powerful position as they, themselves determined much of the curriculum and their own level of involvement. Also at mid-century, the PTAs began to focus their energies on providing support to the schools, and parent education was soon taken over by other public agencies. At the century's end, cooperative preschools and Head Start centers still provided opportunities for parents to help set policy.

In public-school settings, however, legislatures and local district headquarters had largely taken over this power. An emerging development became that of the so-called community school in which daytime education has been just one of the activities provided. At other hours, and even to some extent during the day, family resource centers and literacy programs provide extra opportunities. In other words, the trend has been toward a modern-day version of the mid-nineteenth century model. One view that both centuries share is that parents are children's first teachers. Today, however, this has meant a greater respect for what parents provide, rather than automatically assuming a deficit model in which parents must be brought up to the standards set by the school. There is generally some effort given to understanding and respecting cultural and family differences. When such efforts succeed, positive partnerships between parents and school or center are created.

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CURRICULUM, TEACHING METHODS, AND ASSESSMENT

A curriculum appropriate to young children, the assessment of its effectiveness, particularly for the purposes of improved future experiences, and the methods chosen to teach the curriculum are generally quite different than those for subsequent years. The reasons for this pertain to the unique aspects of young children's development: their learning is more rapid than that of older children and adults; they learn indiscriminately from everything in their environment, whether positive or negative; they are

focused on themselves, believing everyone else sees things from their perspectives; and they are just beginning to learn how to interact successfully with others.

TYPES OF CURRICULUM

A major approach to curriculum in the early years is to integrate the subject matter. It is argued by many early childhood professionals that young children do not learn about their worlds by dividing knowledge into academic subjects. Particularly through kindergarten, teachers focus more on topics of learning than on subject areas, although most subjects are covered in the process.

One typical way of integrating curriculum is through the use of themes. For example, children might spend one week studying each of several colors. One week could be devoted to orange and include eating oranges, preparing and drinking orange juice, seeking out objects in the environment that are orange, painting and coloring with orange, and so on. Other common themes include holidays, seasonal changes, clothing, transportation, and families. Theme teaching is especially popular in preschools where assessment according to academic subjects is a rarity. Themes provide an organizing structure for teachers and a focus for children's learning. A collection of themes might remain the same from year to year or they might change depending on the children's and the teachers' interests, or there might be a combination of the two approaches. Kindergarten teachers may also rely on theme teaching, but topics are usually studied for a longer period of time, are more sophisticated than those of the preschool, and are more likely to pay homage to academic considerations as well as to children's interests. As an example, a class living near a coastline might study ocean animals. Activities could include listening to factual stories, visiting an aquarium and dictating to the teacher follow-up reports, drawing and labeling pictures of sea animals, creating models of animal habitats, and role-playing the life cycles of various creatures. When themes are organized into a focused collection of activities such as these, they are usually referred to as thematic units.

A second approach to integrating curriculum that is less common than thematic units, but rising in popularity since the mid-1990s, is project-based

learning. While the teacher often prepares thematic units before a school year begins, projects are designed through collaboration between children and teacher. Topics might be suggested by the teacher, who will have observed children's behaviors and conversations, or by the children directly. A project might last a very few days or for many weeks. During this time, youngsters engage in research whether they are preliterate preschoolers or academically oriented primary children. For the youngest students, learning is reported through drawing, painting, modeling, or dictating stories to the teacher. Older children engage in these activities but also read factual books, write and illustrate reports, and make presentations. Project-based learning is often broken down into three basic steps: an exploratory period when children and teacher discuss topics of potential interest and vote on them; a learning time in which the research is done (this is the step that takes up most of the time); and a final sharing phase in which reports are made, dramatic play centers are created and played in, parents and others are invited to learn about the life of the project, and so on. Much early childhood writing for teachers, in recent years, has focused on how to work with children of varying ages to create successful projects. This approach to integrating curriculum is more complex and difficult than thematic units because a large degree of power is given to children, and teachers must learn to support their learning rather than directly lead it.

Although teachers frequently make use of themes and projects, they must still attend to the academic subjects. This is particularly true in the primary grades and even in kindergarten where subjects are often not integrated but taught individually and explicitly. Although each subject is important, reading, writing, and oral language are, perhaps, universally accepted as the primary focus for academic learning in the early years. For any English-speaking country, intense efforts are required to help children make sense of a complex system of spelling and phonics. Researched approaches to helping children achieve mastery are several and frequently in such conflict with each other that disputes between the proponents for each have been termed "the reading wars." Increasingly, since the late 1990s, attempts have been made to find a compromise and to help teachers choose whatever approach works best with each individual child. Thus, there may be in any one kin-

dergarten or primary classroom a mixture of instruction that includes a focus on teaching phonics skills (with drills and tests to ensure success) as well as a preference for “whole language,” an approach that integrates reading, writing, and oral language, and that eschews drills and tests. Current theories of young children as literacy learners include the view that they do not arrive at kindergarten or first grade ready to begin learning, but that they have been gaining literacy knowledge their entire lives. The concept of emergent literacy recognizes that some children come to school reading, others prepared to read immediately, and still others in need of introduction to the world of print. Teachers of infants, toddlers, and preschoolers devote much effort to providing literacy-related experiences to prepare them for upcoming school expectations.

Mathematics for very young children includes concepts such as many, few, more, less, etc. Geometry is also a focus. Children only gradually attain a true understanding of number, although they may be able to rote count as soon as they can talk. Historically, there has been a disagreement as to how best to teach children arithmetic facts that mirrors the disagreement surrounding literacy education. Drill and practice may be efficient but may also not help children achieve understanding; learning facts in the context of interesting stories and games may make children more attentive, but their skill levels may not achieve automaticity. A combination of the two approaches is typically found in classrooms for young children. Whatever method(s) may be chosen, early childhood teachers are careful to include concrete materials that can be manipulated. Young children are incapable of achieving mathematical competence when provided simply with abstract concepts, pencils, and paper.

Social studies education reflects the fact that young children understand the here and now long before they grasp concepts related to distant geographies and long ago history. Geography, if it includes mapmaking for example, might focus on mapping the school or the neighborhood. History could include a study of the children’s families. Civics might simply pertain to learning to make classroom rules, economics to using play money in the dramatic play center’s store.

Science, like social studies, typically pertains to children’s own worlds and this frequently includes a

study of the neighborhood flora and fauna. Pets might be brought from home and their species studied further. Simple physics experiments on familiar materials can be carried out, although deep understanding of cause and effect is not expected.

The arts are important to early childhood education, with more time devoted to them than is typically observed in the later years of schooling. Drama is an integral part of most early childhood classrooms with dramatic play centers in almost daily use. Here, children are provided with materials and costumes that carry out themes related to daily life or to a current theme of study. Materials are generally to be used in unscripted free play. Music also, for the most part, stays close to children’s known lives. Songs may reference people or animals commonly found in their environment or familiar fantasy themes. Additionally, adult music is often introduced, usually for listening purposes as well as for free dancing opportunities. The visual and decorative arts reflect those engaged in by adults such as painting, sculpture, collage, embroidery, and so on. For the youngest children activities could include “painting” with water on the sidewalk; simply pounding and squeezing play-dough to better understand its attributes; or gluing a few recently collected leaves on a piece of colored paper. Painting is typically done at easels where color-mixing experiments might be encouraged and nonpermanent paints are easily washed out of clothing. In many sites, art materials are available at all, or most, times for children to choose as they prefer.

Formal physical education is generally not taught until the primary grades or, at the earliest, kindergarten. Early childhood educators more often refer to movement education in which skills related to stability, motor development, and manipulation are taught. Activities that encourage stability or balance include walking on balance beams, climbing in and out of large inner tubes, swinging and landing, and stopping and freezing after running. Locomotor skills, those that help children move through space, are enhanced through activities such as crawling, running, jumping, hopping, skipping, galloping, and climbing on equipment. Other movement activities that don’t involve moving through space include bending, stretching, and twisting. Manipulative skills often combine stability, locomotor, and nonlocomotor abilities and can add work with balls,

bats, beanbags, and Frisbee discs. Movement education in the early years is most generally taught in a playful, noncompetitive atmosphere.

METHODS OF TEACHING AND LEARNING

Learning through play is a longstanding and respected methodology in early childhood education. “Play is the work of the child” is a saying attributed to kindergarten creator Friedrich Froebel and quoted freely ever since. Through play, infants and toddlers experiment with and learn about the physical attributes of their surroundings. Preschoolers and kindergarteners are given more complex materials but these, too often provide opportunities for learning through play. Even in the early grades, new learning materials are often introduced by letting children freely play with them for a while. Teachers who subscribe to the constructivism of Jean Piaget and Lev Vygotsky believe that permitting children to play encourages both cognitive and social development. Many writers and researchers consider play to be a primary, even *the* primary, developmentally appropriate method of fostering young children’s development.

Another methodology used in early childhood education is direct instruction. This is more complex than simply instructing children directly and includes little, if any, lecture presentation. The purpose of direct instruction is to teach a skill or procedure and, in early childhood, this may be a necessary first step before experimentation or play can take place. There are four basic steps to most direct-instruction lessons: the teacher’s demonstration of the skill or process, teacher-guided practice for the children, independent practice, and (possibly) transfer to other situations. An example of how this might work can be seen as the class prepares to take a field trip to the neighborhood grocery store. First, the teacher talks through appropriate behavior such as walking with hands behind backs or in pockets (demonstration of process). Then, as the teacher observes and comments, the children practice walking through the classroom with hands behind back or in pockets (guided practice). Third, the children take their field trip and remember how they should walk (independent practice). And, finally, a while later a second field trip is taken to the local museum and the chil-

dren demonstrate that they still know how to walk correctly (transfer of learning).

In addition to play and direct instruction, another commonly utilized method is known by several names such as learning centers, activity centers, center time, and free choice time. Teacher-selected materials are placed in centers throughout the room or on shelves around the edges. If the former, children work and play with the materials where they are housed. If the latter, materials are brought from the shelves to tables or desks. Direction of the experience can come from the teacher who allots a fixed amount of time to each center, signaling the children when to move on to their next assigned center. Direction can also come from the children who select the centers and materials they wish to interact with. Teachers choose materials for the centers based on children’s interests and the current curriculum (integrated, themed unit, individual academic or arts-related subjects, or a combination of these.)

ASSESSMENT AND EVALUATION

Assessment is the process of gathering information and evidence about classroom learning. Early childhood educators continuously engage in three kinds of assessment: of the effectiveness of the curriculum and teaching methods, of the children’s progress, and of the general program. As assessment information is collected, it is analyzed and evaluations are made so that improvements, new directions, or continuations of current practices can be decided upon.

Throughout the early years, multiple forms of assessment are used to document children’s cognitive, language, social, emotional, and physical development. These assessments can include samples of children’s work, such as pictures, three-dimensional art projects, and beginning attempts at writing; teacher’s notes regarding conversations; observations of child-child interactions or play and work habits; and notes kept of interactions with parents. To these everyday sorts of data are added less frequent standardized tests that may be given to assess individual children’s skills or to evaluate the progress shown in an entire program. Typically, the decision to use standardized tests is made, not by teacher, school, or center, but by government agencies.

The so-called accountability movement of the early twenty-first century has led to more focus on stan-

standardized testing, including for the early years in education. The National Association for the Education of Young Children (NAEYC) has long held the position that day-to-day documentation provides more valid assessment results than the snapshot views provided by formal tests. Young children who excel on a test one day may do badly the next because of lack of consistency in development, mood changes, hunger, fatigue, and a general lack of understanding of the need to perform well on an important test. In 2002/2003, the NAEYC joined with the National Association of Early Childhood Specialists in State Departments of Education (NAECS/SDE) to write a position statement officially expressing such concerns. It is their shared position that accountability should be based on a variety of documentation of children's gains over time, using multiple sources of assessment. During this same time period, a mandate from Head Start was ensuring that programs nationally would carry out standardized tests on children's cognitive gains as a way to determine increased funding of Head Start programs. Appropriate assessment and evaluation in early childhood programs remains a controversial area.

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MODELS OF EARLY EDUCATION

Based on everything from informal, personal observation to quantifiable research, a number of educational models have been created for young children. Some have been in existence for close to a century, while others have emerged in recent decades. Those described in this entry are among the most visible and frequently referenced by professionals in the field. They are described in alphabetical order.

HEAD START PROGRAMS

Head Start is a federally funded program that has existed across the United States since 1965. It began as one component of President Lyndon Johnson's "War on Poverty," a vast national effort that instigated a variety of social programs. Originally conceived as a summer program for economically disadvantaged children about to enter kindergarten, Head Start was to

focus on children's social development and health. Soon added were academic experiences, parent involvement and education, and a full-year program. The benefits to young children were immediately apparent to kindergarten teachers and the children's families, and the program continued to receive expanded congressional support until 1969 when the Westinghouse Learning Corporation was hired to evaluate the continuing progress of Head Start graduates. It was found that most gains demonstrated by the children upon kindergarten entry were lost during the primary grades. Suddenly, congressional support faded along with that of President Richard Nixon, who had initially adopted his predecessor's enthusiasm. There followed a number of years in which Head Start fought for its existence, a situation which was at least partially resolved when children who had graduated from federally funded preschools were once again evaluated in their mid-twenties. It was then found that, compared with their peers who had not attended such programs, the graduates were more likely to own homes, to have graduated from high school, and to have attended college, and less likely to end up in prison, or need social services. Congressional support again became more positive and a variety of programs became available to children and their families.

The yearlong model for four-year-olds remains the best-known and most common Head Start program. The Follow Through program was added to assist children in retaining their early gains throughout the elementary years. As the importance of learning opportunities from birth onward became better known, other programs were added. Early Head Start is designed to help parents either in their homes or in the center. Its primary purpose is to provide parents with a better understanding of positive interactions with their children from birth through age three, but it also helps parents learn ways to meet their own life goals. Home Start is specifically designed to give three-year-olds preparation for the regular Head Start program they will have the following year. Although teachers visit the homes to provide children with learning activities and their parents with teaching ideas, the children may well make occasional visits to the four-year-olds' program to prepare for the upcoming year. Even Start serves young children equally with their parents. While the children attend Head Start, or even elementary school, their parents are provided with English as a Second Language (ESL)

training, literacy education, vocational training, or help in working toward a general equivalency diploma (GED). Whatever academic program is needed or chosen by the parents, they are also provided with parenting classes.

HIGH/SCOPE PROGRAMS

This approach to early education began in the early 1960s with funding from both federal and private agencies. The original center, in Ypsilanti, Michigan, collected economically disadvantaged children from the neighborhood of the Perry Elementary School and became the Perry Preschool. Children were provided with an education based on the psychological principles of Jean Piaget, in which they were encouraged in their self-construction of knowledge. In succeeding years, the curriculum has evolved, but the basic underlying philosophies have remained the same. The founder and driving force behind the establishment of the preschool was David P. Weikart (1931–2003), who not only contributed the philosophy and teaching approaches but immediately began to collect data on the entering children, thus providing the baseline needed for follow-up research years and decades later. In 1970, Weikart founded the High/Scope Foundation, an independent, nonprofit research and development organization. Today, the foundation provides training and advice to early education sites across the United States as well as internationally. A demonstration preschool remains in Ypsilanti. Close to 40 percent of all Head Start programs use the High/Scope approach to teaching and curriculum.

At the core of the program is a series of “key experiences” deemed essential to young children’s development. Grouped into ten categories (language, literacy, classification, seriation, number, space, time, creative representation, movement, and social representation), the key experiences are provided by teachers on a daily basis. The method of teaching involves little direct instruction and relies instead on the children’s interests to guide them in exploration, problem solving, planning, and interactions with other children and adults. Youngsters are not, however, simply let loose to do as they choose. There is a “plan-do-review” sequence that requires them to think about what they will do, carry out their plans, and then reflect on the experience.

Although High/Scope is not a Head Start organization, the two maintain close ties. In addition to providing training and advice to many Head Start centers, High/Scope has participated in studies evaluating some aspects of Head Start and offered support through advocacy activities. The Perry Preschool Project was the first to provide a long-term follow-up study of preschool graduates when they were in their late twenties. It was found that, as compared to children who had not attended preschool, the Perry children were far less likely to be arrested or give birth out of wedlock, and more likely to engage in higher education and earn enough to buy a home and a second car. These findings went far toward convincing Congress that federal funding for preschool education was worth continuing.

Another study, begun about the same time, compared three models of early education for children from financially disadvantaged families: High/Scope with its child-centered curriculum and teaching, direct instruction with high intensity teacher-led lessons, and traditional nursery school with a child-centered approach that contained less structure than the High/Scope program. By age fifteen, graduates of the nursery school and High/Scope programs were less likely to be delinquent from school or to need special education for emotional impairment. By age twenty-three, these two groups were more likely to be living with their spouses, aspire to higher education, and have fewer arrests than the graduates of the direct instruction program. The authors of the study attributed the differences to the sense of personal and social responsibility fostered by the preschool programs in which children were given some power over their own lives.

MONTESSORI EDUCATION

This model of education is named for its founder, Maria Montessori (1870–1952). Her birth occurred the same year that Italy became a unified nation rather than a collection of independent states. The idealism and optimism of the new country expanded the educational options for women, thus making it possible for the young Maria, unlike females before her, to study engineering and, later, medicine. Her research at the University of Rome’s psychiatric clinic led to concerns about the treatment of young children with cognitive disabilities that were housed with

the insane adults. Montessori began studying available literature on appropriate treatment of such children, and then expanded her reading to Jean Jacques Rousseau, Johann Pestalozzi, and Friedrich Froebel. While continuing her work with the institutionalized adults, Montessori began to experiment with teaching materials and methods for the children. At one point, she entered the eight-year-olds in the state examinations of reading and writing and they performed as well, and even better than, children in the state schools.

Thus encouraged, Montessori engaged in still more educational experimentation while retaining her medical practice. Before long she was invited to create a day-care center in a new public housing project so that preschool-aged children would not roam free while their parents were out working. This provided her with the necessary population to try out her ideas with children of more normal intelligence, and she accepted the challenge willingly. A young woman of modest education was hired as a teacher so that Montessori could train her completely. Slowly, over time, Montessori observed the children to learn from them what materials and methods worked best. At other times, teaching decisions were made based on necessity if, for example, there were too few funds to purchase sufficient materials.

From her observations and (sometimes necessary) decisions, Montessori determined that: (1) mixed ages work best to foster pro-social interactions; (2) freedom of movement for the children as well as self-selection of activities promote democratic behaviors; (3) too few materials can be positive in that the situation can enhance sharing behaviors; (4) giving the youngest children highly structured materials and activities provides them with a sense of security and self-confidence; and (5) real tools, rather than toys, for housekeeping duties shows children that they are respected and leads to their active participation in their own families' daily activities. Based on these conclusions, Montessori created a system of teaching and learning, as well as an entrepreneurial enterprise to sell materials, that has worldwide adherents to this day. Although the system was originally created for financially disadvantaged children, its attendant expense and nontraditional approach to teaching have led to the creation of mostly private schools. Where Montessori education is found in public settings, it is generally offered only for children whose

parents choose it over the regular classrooms, and typically no higher than the primary grades, although Montessori did eventually create models for older children as well.

Teacher training schools were instituted by Montessori and now appear in many countries, although they may differ in their interpretations of her educational approach. Nevertheless, observation of most Montessori schools demonstrates more commonalities than differences. These typically include: mixed ages, usually one class for the preschool and kindergarten ages and another for the primary grades; furniture placed so that children may choose to work alone or in groups; a collection of small rugs so that children are able to work on the floor; free choice of materials, along with the ability to use them as long as desired; older children helping, and sometimes teaching, younger children; a structured approach to materials that includes specific instructions for their use and preferred ages for their introduction; and teachers who regard themselves as facilitators and guides who present materials, then step back to let the children take over as they are able. The rhythm of a day is, to some extent, decreed by the children's interests. There are few full-group sessions with the teacher in charge. Rather, children move throughout the room choosing individual or group activities while the teacher selects individuals or small groups to work with.

REGGIO EMILIA EDUCATION

Shortly after the end of World War II, a young Italian middle-school teacher by the name of Loris Malaguzzi set off on his bicycle to investigate a new school he had heard about. What he discovered was a group of mothers handwashing bricks from bombed out buildings so that they could build a preschool for their children. Nearby were horses and tanks left behind by the retreating Germans—the mothers planned to sell these to complete the building and buy supplies. They did not yet know where money would come from to pay a teacher. Impressed by their dedication and vision, Malaguzzi returned often, eventually forming a relationship with the school and others like it that emerged in the postwar years. In time, as he expanded his studies of education and psychology to include early childhood, Malaguzzi's ideas became the inspiration for methods and cur-

ricula in preschools throughout the Reggio Emilia region. Parental involvement also evolved over time so that, eventually, the preschools were funded by municipal taxes, willingly voted in by supportive citizens. As the schools grew in number and reputation, word of them reached other countries and teachers from abroad, most notably the United States, came to study their methods.

Underlying the methods, materials, and curricula used in Reggio Emilia preschools is a continuing history of research into theories and philosophies and their practical applications. Malaguzzi, as original inspiration for this approach to teaching, included in his first research a visit to the Institut Jean Jacques Rousseau in Geneva, Switzerland, where Jean Piaget researched and influenced the education of young children. Impressed by Piaget's ideas, Malaguzzi suggested a constructivist approach to education with a stronger focus on mathematics than many early childhood programs might include. As Malaguzzi and the Reggio Emilia teachers continued their studies and discussions, the curriculum evolved to include more focus on the arts, but the methodology retained its respect for children's construction of their own intellects, the primary tenet of constructivism. By the time of Malaguzzi's death in 1994, Reggio Emilia schools had attained international fame, were being adapted to the needs of preschools in other countries, had exported some of their leading master teachers to instruct preschool teachers in those countries, and were continually evolving as new research and philosophies arose.

Central to the Reggio Emilia schools' curriculum are child-initiated projects, similar to those described in the previous entry under Types of Curriculum. Teachers may observe children's interests and suggest related ideas for study, or the children may themselves propose ideas. Such projects might last a day or two or many weeks. Among the latter group was a project impressive enough to be videotaped for international distribution. In the mid-1990s a group of children decided to create an amusement park for birds. This involved building bird-size models of park components with which they were familiar such as Ferris wheels and food stands. Other projects have involved studies of their town square and neighborhoods. Documentation of the children's research is an important part of each project. As preschoolers, the children are generally

preliterate, so the arts are relied on for expression. Malaguzzi spoke of these alternate ways of communication as "the hundred languages of children." Meanwhile, the teachers also document the children's learning and progress, and continue their reading and discussions so that their ideas are continually evolving.

When exported to the United States, the so-called Reggio Approach takes on somewhat different forms because it is an approach to education that is intended to be culturally sensitive. Documentation, for example, might be more technologically oriented than that used in Reggio Emilia. Or, a school might decide to focus more on mathematics or literacy experiences. What generally remains, however, is a continual study and discussion among teachers about theory, philosophy, and research, and the best application of these in their own site. Additionally, what remains is a respect for children's self-construction of knowledge, and this leads to research projects instituted by the children themselves.

WALDORF EDUCATION

Waldorf education was first described simply as an idealistic concept, to workers in a German cigarette factory. The speaker was Rudolf Steiner (1861–1925), a philosopher, and the year was 1919, shortly after the end of World War I. Steiner's speech covered his ideas on politics, economics, and education. The owner of the factory, impressed by Steiner's ideas, invited him to start a school for the workers' children. Steiner's requirements that the school be open to children of all classes, that it provide education through the twelfth grade, and that it have a spiritual but nondenominational orientation were agreed to, and planning began immediately. The school rapidly became known throughout Europe and eventually across the world with about five hundred similar schools in existence by the end of the twentieth century.

Underlying his ideas about what schooling should be was Steiner's theory of stage development. As applied to early childhood, there is a single stage covering birth to about age six or seven when baby teeth fall out and permanent teeth emerge. In this first stage, children learn through imitation of their elders, by active experiences, and through empathy for others. They absorb everything with which they come in contact, both positive and negative. When

the second stage appears, not only do permanent teeth come in but also there emerges the etheric life force, or vital energy that defines all living beings as differentiated from the earth's mineral elements. Learning through imitation is now replaced by feeling and rhythm.

Added to his stage theory was Steiner's unique blend of eastern and western philosophy, which he called anthroposophy (from the Greek *anthropos* meaning man and *sophia* meaning wisdom.) It was his belief that anyone, even laborers in a cigarette factory, could attain wisdom and knowledge and cultivate a sense of beauty and care for others. Education to gain these attributes should begin in the early years, but that would not mean that young children should be rushed into academic pursuits. They should, in fact, be permitted to enjoy their childhood by engaging extensively in art, music, dramatic play, and stories.

Since children in the first stage learn by imitation, art projects, in which teachers lead children in copying their models, are unique in the early education world in which independent creativity is more the norm. Materials are as natural as possible and synthetics avoided. Modeling materials and crayons, for example, are made from beeswax, felt to be most appropriate in its softness to young children's hands and the most aesthetic as well. In addition to the visual arts, eurhythmy encourages aesthetic knowledge and abilities. This art form, created by Steiner, blends movement, rhythm, language, and music. Literacy training, in Waldorf education, is postponed until well into the second stage of development, to the extent that teachers tell their well-rehearsed stories to children rather than read them. Pictures are not shown so that children can create their own through imagina-

tion. Such a view, unique to early education models, demonstrates respect for the oral culture of young children and a willingness to enhance it rather than to deny it by moving quickly toward early literacy experiences. When children begin first grade, fairy tales are the focus. Second-grade children learn traditional fables, and third graders, now fairly comfortable with reading, learn Old Testament stories. It is believed that fairy tales, fables, and Old Testament stories will all appeal to children moving into the feeling mode of the second developmental stage.

Waldorf schools emphasize aesthetics, not only in the curriculum, but also in the physical layout and décor of the classroom. When possible, schools are built to specifications that include nonrectangular rooms. Instead, there are walls at varying angles to achieve a less rigid and boxed-in feel. The walls are then painted in subtle colors and interesting textures. Fabrics are hand-dyed, with yardage sometimes draped artistically and invitingly over screens or furniture for young children to use in their fantasy play. Teachers spend hours creating beautifully artistic displays of natural materials for the children's enjoyment, or drawing illustrations for stories with colored chalk on the blackboard. Even any accompanying descriptions will use a variety of colors to match. In general, Waldorf schools may be said to focus on the aesthetic and to delay the academic more than all other approaches to early education. Given the opposite thrust of today's publicly supported education, this has meant that Waldorf schools are regarded as alternative, nonmainstream, and only for families that can afford private schooling.

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WEBSITE RESOURCES

- Association for Childhood Education International (ACEI) www.acei.org
- National Association for the Education of Young Children (NAEYC) www.naeyc.org
- Organization Mondiale pour l'Éducation Prescolaire-United States National Committee (OMEP) www.omep-usnc.org

CHILDHOOD EDUCATION

Education in the United States is unique. The organization, content, and teaching strategies are different from other countries around the world. The unique history of the United States has been a major force in shaping the educational system. The history of elementary school dates back to colonial times where a single teacher was responsible for teaching reading, writing, and arithmetic to students ages six through fourteen.

Today elementary schools serve as the primary institution of formal education. Elementary education has come to mean a child's first formal education. Elementary schools prepare children in basic skills and knowledge areas.

The age range of students attending elementary school is from six to twelve. Traditionally, elementary schools include grades kindergarten through eight. While some schools retain this structure, a more common plan is grades one through six. In many school districts, elementary education—commonly referred to today as childhood education—is organized into levels: primary, consisting of grades kindergarten through third; intermediate, consisting of grades four, five, and six; and upper elementary, consisting of grades seven and eight. Other patterns may include grades seven and eight, and often six and nine are moved into middle or junior high schools. Grades six through twelve are often linked to secondary education where students have several teachers and move from class to class.

Elementary school teachers must be knowledgeable in their content area, must have the ability to communicate, motivate, and inspire, and understand the academic and emotional needs of their students. Teachers should be organized, patient, and creative. They should be able to recognize and respond to students' individual and cultural needs by using various strategies that allow them to achieve at higher levels.

Elementary teachers play an important role in the

development of children. The early learning experiences children have can shape their views of themselves and their world and can affect their later successes or failures in school, work, and personal lives.

Most elementary school teachers instruct one class of children in several academic subject areas. These include instruction in reading, language arts, mathematics, social studies, science, health, physical education, and the arts. Because proficiency in reading is the key to academic success, nearly all elementary schools devote a great deal of time to reading instruction. Mathematics instruction is next in time allotment followed by social studies and science. The United States is often compared unfavorably to other countries in respect to learner proficiency in science and math, which has prompted increased emphasis on these subject areas in the elementary school.

Assessment in the elementary school is integrated with instruction. Teachers use classroom assessments to improve student learning. Effective teachers continually assess student learning and adjust their instruction based upon their findings. Assessment not only documents learning, but also enhances the learning process. Standardized testing has come to play a major role in the elementary classroom as well. The emphasis on this type of assessment has caused many changes in the elementary curriculum and instructional methods.

CURRENT ISSUES

National debate over the purpose of schooling has continued since the inception of the elementary school. This debate has resulted in a number of reforms and changes over the years. Some of these changes have left a lasting impression on elementary schooling and others have simply vanished.

There are several issues currently engaging the pub-

lic in debate. One of these issues is student performance. Student performance is seen as a failure of the educational system. This has led to numerous state and national mandates. The No Child Left Behind Act of 2001 is one such mandate. It requires each state to implement a system of accountability that identifies low-performing schools. It also requires students in grades three through eight to be assessed in reading and mathematics once a year. Many feel this testing has caused measurement-driven instruction where tests determine what is taught, how it is taught, and even what is learned and the manner of such learning.

Immigration in the United States has long been an issue in elementary education since its inception. Immigration patterns shifted greatly at the beginning of the twentieth century and continue to shift as children from other countries enroll in elementary schools. Immigrant children have special needs that must be met by the elementary schools. The debate as to whether immigrant children should be taught in bilingual classes or be instructed in some form of English education has attracted much attention. Advocates of the bilingual education stress the importance of not delaying the child's education until they become proficient in the English language. Others feel that learning English is most important and that bilingual programs block or hinder that goal.

Incidence of school violence and drug use has increased in the late twentieth century. This includes the elementary schools as well. Younger students are exposed to more violence and drug use earlier in their lives. The National Educational Association provides information and tools to help administrators, teachers, and parents create safe schools. Conflict resolution, peer counseling, and character education have become part of the elementary education curriculum. Early intervention at the elementary level seems to have the most impact for students. Programs provide learners with life skills that will help them avoid involvement with drugs, bullying, and violence.

Homelessness and poverty are also issues of importance at the elementary school level. Poor and homeless children are more likely to experience difficulties in school. Many of these students require transportation from their shelter and this can often take up to an hour of commuting each way. These students also do not have the home advantages that other students may have. Such things as a place to do their homework, school supplies, and a good meal

may not be a part of their lives. Education and training for teachers and administrators seems to be the most effective strategy for working with homeless students. Communication with parents is essential to these students' success in school.

Inclusion of students with disabilities is another issue facing elementary schools. In order to comply with the provisions of Public Law 105-17, The Individuals with Disabilities Education Act of 1997, schools are obligated to deliver help to these learners in the regular classroom where they are enrolled. All modifications to their programs take place within the standard classroom, and often includes creating space for wheelchairs and other special equipment. Elementary schools must make their programs and facilities user-friendly for students with physical, mental, and behavioral disabilities. These issues are just a few of the current challenges faced by elementary education.

This chapter on elementary education has six entries. In the first entry, assessment is addressed. Classroom assessments, authentic assessment, and standardized tests are described.

Developmentally appropriate instruction is the topic of entry two, and attention is given to developmental learning phases, the teacher's role, and instructional strategies. In entry three, the topic describes the essential characteristics of elementary level teachers. Both personal and professional characteristics are outlined. Essential elements of the elementary school are the topic discussed in entry four. Ways in which the elementary school differs from the middle and high school are examined. The explicit, implicit, integrated, and extra curricula are the basis of discussion in entry five. The final entry of the chapter provides a look at the elementary school student and the characteristics that make them unique classroom learners.

Karen Megay-Nespoli

ASSESSMENT IN THE ELEMENTARY SCHOOL

Assessment in the elementary school has changed over the years. Assessment was once thought to come at

the end of instruction to measure only what students have learned. Today assessment is an integral part of teaching and learning. Research on teacher decisionmaking, cognitive learning, student motivation, and other topics has contributed to new understandings about assessment. For example, assessment that enhances learning is as important as assessment that documents learning (McMillan 2004).

Assessment can take many different forms; and can reflect many different kinds of achievement. Teachers direct both the assessments that determine what students learn and those that evaluate how they feel about learning. Some forms of classroom assessment of student achievement, which guide most decisions, include: asking questions, interpreting answers, reviewing homework assignments, using tests and quizzes, and judging performances. Assessment is ongoing in the classroom.

As the research below indicates, assessment used during instruction can have a profound impact on student achievement providing the information is accurate and used in an appropriate way.

CLASSROOM ASSESSMENT

Classroom assessment is more than testing or measurement. It is the collection, evaluation, and use of information to help teachers make better decisions. Classroom assessments differ from standardized tests that are administered yearly to gauge student achievement. They are most frequently used for formative purposes, to help students learn, but can also be used summatively to determine a final or report card grade.

Research on Classroom Assessment

Research reveals assessment used during instruction can have a positive impact on student learning when:

- the assessment provides specific and meaningful feedback encouraging students to regulate their own learning;
- it is used formatively to help students learn rather than summatively for a grade;
- the assessment places emphasis on understanding, thinking skills, and applying what they have learned to real world demands and challenges;
- it relies on student interaction that encourages self-regulated learners who have an awareness and willingness to explore new ideas and develop new skills;
- the assessment reflects achievement expectations that are set high for all students, yet are attainable, to maximize student confidence; and
- the modes of assessment are varied with the diversity of achievement expectations valued in most classrooms (Crooks 1988).

Developing and Using Classroom Assessments

Classroom assessments must be carefully developed to ensure that they provide accurate information. Richard Stiggins describes a set of guiding principles to follow when developing and using educational assessments meaningfully.

- *Be clear about what needs to be assessed.*
Before teachers can assess a student, they need to know the kind of knowledge, skills or performance they want students to learn. The more clearly teachers specify the learning target, the better they will be able to develop assessment tasks.
- *Clarify the specific purpose of gathering the information.*
A clear vision is needed of what the assessment will accomplish. The developer of any assessment should be able to answer the following questions: Why are you assessing? How will student learning be enhanced by the assessment? Who will use the results? How will they be used? Special emphasis should be on the student in order to integrate assessment with instruction.
- *Use a variety of methods.*
Since there are different kinds of achievement, using multiple types of assessment will enhance their validity. Options available to classroom teachers include: multiple choice questions, true/false, matching, fill in the blank, essays, rubrics, performance assessments, and direct discussion with the student. Often several assessment techniques are needed to ascertain the extent to which a student has achieved a learning target.

- *Consider limitations when interpreting data.*

The information gathered from any assessment is only a sample of a student's achievement. Assessments cannot possibly reproduce everything students need to learn. Teachers must also consider problems that arise from the test, from the testing environment, or from the individual student (Stiggins 2001).

Decisionmaking

Teacher decisionmaking plays an important part in the assessment process. Both teaching and learning require teachers to continuously gather information and make decisions. Research estimates that teachers spend one third to one half of their time in assessment-related activities (Stiggins and Conklin 1992).

Decisions are made before, during, and after instruction. Assessment is involved in each stage of the instruction process. Preinstructional assessment allows teachers to determine what students should know, understand, and be able to do at the end of a unit.

Assessment instruments should be developed before instruction in order to guide instruction. This is often referred to as the "backward design" (Wiggins 1998). Working backwards allows teachers to focus upon the outcomes and specify the evidence needed to document student learning. This provides integration between assessment and instruction.

Once the evidence has been specified, the teacher can begin to plan the instruction. During the lesson or learning activities teachers are once again involved in assessing information, which is used to monitor learning, check for progress and diagnose learning problems.

After instruction, assessment provides information for grading students, evaluating teaching, and evaluating curricula and school programs. Assessment is integrally related to all aspects of teacher decisionmaking and instruction (McMillan 2004).

Recent Changes in Classroom Assessment

One of the most important changes in classroom assessment is the emphasis on authenticity (Wiggins 1998). Authentic assessments challenge students to use multiple methods to solve authentic problems. Authentic Assessment:

- places emphasis on metacognition and self-evaluation;
- provides meaningful performance tasks;
- specifies clear standards and criteria for excellence;
- produces quality products and performances;
- emphasizes learning that transfers; and
- fosters positive interaction between assessor and assessee (Burke 1999: xxi).

Alternative assessments are sometimes referred to as authentic assessments. However, these terms should not be used interchangeably. Alternative assessment usually means in opposition to traditional testing methods such as standardized achievement tests, multiple choice, matching, completion, and true/false formats. Alternative assessments include authentic assessments, performance assessments, journals, demonstrations, portfolios, and other forms of assessment that demonstrate more directly what the student has learned.

Another important change has been to involve students in all aspects of assessment from helping to develop assessment exercises to peer and self-evaluation. Engaging students in these activities helps students understand the evaluation process and how their own performance is appraised.

No single assessment tool alone can produce the quality of information necessary to make an accurate judgment of a student's knowledge and understanding. What is needed is a balanced approach that includes traditional, portfolio, and performance assessments. When these assessments are administered appropriately and are used in credible ways for decisionmaking they will provide a more accurate portrait of the individual learner (Burke 1999).

Standardized Tests

In recent years, standardized testing has grown in popularity largely due to the No Child Left Behind law. This law emphasizes literacy and math, and has imposed testing for children starting in the third grade as a means of raising academic achievement. Standardized test results serve as a source of evidence people use to measure educational progress. These tests summarize large amounts of information in numerical form that

allows easy comparisons of students, schools, districts, states, and countries.

Most standardized tests present a snapshot view of a learner's capabilities. These tests probe low-level kinds of mental processes. Many school districts place excessive emphasis on standardized test scores and teachers are under great pressure to "teach to the test."

In the elementary school these tests pose particular problems for young students from ethnic and cultural minorities. Standardized tests discriminate against minority learners because these learners do not have the same experiences or background that other learners may have. Students' individual needs and learning styles are often neglected in this movement to standardize curriculum. In addition, students' test scores are being used to make important decisions about a student's future—such as being retained in the same grade.

Student Portfolios

A portfolio is a carefully selected collection of student evidence that shows growth over time. Portfolios allow students to look objectively at their work and reflect on their learning. Students analyze their strengths and weaknesses and set appropriate goals. Various types of portfolios are used at the elementary level; these include writing, best work, unit, themed, and standards-based. Samples of student work are collected over time, across media, and for a variety of purposes.

Student portfolios have several advantages. Portfolios serve as a basis for discussion between the teacher and the student. Portfolios provide a place to reflect on learning. Without this element of reflection a portfolio is just a collection of a student's work. Portfolios allow students to set goals for themselves or goals for improvement to challenge themselves. Portfolios allow students to make connections between old information and new. Last, portfolios allow students to make decisions as to what pieces to include in their portfolio. Portfolios can provide insight into areas that may be overlooked, such as learners' interests, persistence, motivation, and self-concept. When used properly they can provide a rich array of information that helps teachers make solid judgments about an individual learner's performance.

Grades

Grades communicate the results of evaluation. They are of interest to students, parents, employers, and college admission officers. A commonly used system in the United States awards students letter grades. A grade of A indicates excellence, a grade of C indicates average, and a letter grade of F indicates failure.

The worth of a letter grade system should be judged on how well it communicates the results of evaluation. Critics of letter grades claim that they do not provide enough information to the learner. The letter grade may reflect an average of the information collected. It may reflect not only academic work, but behavior, work habits, and effort as well. Grades can suffer if the student is not well behaved. Many feel that letter grades should be replaced by extensive written comments (Armstrong, Henson, and Savage 2001). Some feel that written evaluations can communicate areas of strength and weakness better than a letter grade, but the reality is that it is no more valuable than the letter grade.

Karen Megay-Nespoli

DEVELOPMENTALLY APPROPRIATE INSTRUCTION

Developmentally appropriate instruction involves the "whole child" and addresses four components of learning: knowledge, skills, dispositions, and feelings (Bredekamp 1987). The basic premise is that the child constructs his or her own knowledge through interactions with the social and physical environment. Children are viewed as intrinsically motivated and self-directed to explore, experiment, and make sense of their experiences (Kostelnik 1993).

A key to this approach is to make learning meaningful for each child so that it reflects their age and individual needs. A strong emphasis is placed on learning to think critically, work cooperatively, and solve problems (Novick 1996).

Curriculum in the developmentally appropriate classroom includes: a broad range of content ar-

eas across disciplines, concentration on key concepts, and tools of inquiry used in various fields. Children conduct experiments, write, perform, collect and analyze data, solve mathematical problems, and learn to use tools that are used by the experts. Curriculum builds upon what students already know and should be able to do by consolidating learning and it encourages the acquisition of new concepts and skills.

TEACHER'S ROLE

Teacher's knowledge of child development and learning, used with knowledge of content and understanding about individual students' strengths, weaknesses, needs, interests, and experiences, are used to create the curriculum and learning environment.

The teacher's role varies from one who guides, observes, and poses problems, to facilitating learning and extending activities. Teachers make it a priority to know each child as a unique individual, to create an intellectually stimulating environment, and to foster collaboration among children. Teachers listen and acknowledge children's feelings and frustrations in order to guide children to resolve conflicts and solve their own problems. Therefore, teachers strive to find a balance between student-initiated learning and teacher support and guidance (Kostelnik, Soderman, and Whiren 1993).

DEVELOPMENTAL LEARNING PHASES

Classroom experiences and activities are organized around developmental learning phases. While children grow at different rates they usually go through specific learning phases. These phases are not solely based upon age but reflect the individuality of the child. Within the elementary school setting there are three specific phases: the early learning phase, the emerging learning phase, and the proficient learning phase.

Early Learning Phase

Early learners are approximately four to six years of age. At this time children begin to separate from adults and develop their independence. They learn to share, play, and work with other children, they look to adults for guidance rather than constant direction, and use materials and ideas with minimum

frustration. During this phase reading and other academic subjects are taught when it is appropriate.

Emerging Learning Phase

Emerging learners are approximately five to eight years old. During this phase they begin to develop skills necessary for future learning. Reading, writing, computation, problem solving, and communication skills are taught. The focus is on what they as learners already know and on moving them forward to new concepts.

Proficient Learning Phase

Proficient learners are approximately seven to ten years old. At this phase the learners become more responsible for their own learning. Learners are able to evaluate themselves and identify areas of strength and weakness. They move toward becoming self-directed learners.

In all of these phases success is the key ingredient. Learning goals are reached in steps. Children become more interested in learning when it builds on success. When they master a learning goal, they feel successful and eager to set a new learning goal (National Association for the Education of Young Children 1996).

INSTRUCTIONAL STRATEGIES

A developmentally appropriate approach to teaching and learning focuses on the individual and requires different learning strategies. Skilled teachers can use a number of instructional strategies to encourage different kinds of growth for their learners. Further, using a variety of instructional strategies helps teachers differentiate instruction and pushes students toward their learning potential. Several types of instructional strategies are discussed below.

Integrated Curriculum

Integrated curriculum connects the full range of subjects in the school's curriculum: reading, math, language arts, social studies, science, art, music, and physical education.

One technique for integrating curricula is a thematic approach. A central theme helps students to meet the learning goals in all areas. Once a theme has been identified, every aspect of the curriculum is organized

around it. Motivation is increased because learning relates to the children's lives and interests (National Association for the Education of Young Children 1996).

Varied Instructional Strategies

This strategy encourages the teacher to use a variety of teaching methods and approaches to support and enhance learning. By providing a wide variety of ways to learn, children with various learning styles are more able to succeed. Some examples include whole language, skill instruction, independent learning activities, "hands-on" science, manipulative mathematics, cooperative learning, units of instruction, projects, learning centers, and other activities.

Flexible Grouping

Flexible grouping enables children to interact with children of different ages, backgrounds, personalities, interests, and abilities. These groups reflect the realities of everyday living. Children can be grouped by skill level, interests, developmental phase, or learning style. Types of grouping can include: problem solving, interest, cooperative learning, peer tutoring, skill or instructional needs, and reinforcement. Flexible groups allow teachers to group students to improve the learning and social emotional growth of children (Espinosa 1992).

Learning Centers

Learning centers allow students to visit independent stations set up throughout the classroom. At each station the children engage in some learning activity. Children can explore and practice skills. There are opportunities for hands-on learning, real-life problem solving, and open-ended activities. Learning centers reflect the goal of active learning. They offer the opportunity for children to be responsible for their own learning; this responsibility is the foundation of lifelong learning (Stone 1995).

Balanced Teacher-Directed and Child-Initiated Activities

Developmentally appropriate instruction encourages a mixture of teacher-directed and child-directed activities. Teacher-directed learning involves the teacher as a facilitator or guide of learning rather than only a

deliverer of information. The teacher often models learning strategies and gives guided instruction. Child-directed learning allows the child to assume some responsibility for learning. The role of the child becomes one of self-initiation and direction rather than a passive recipient of knowledge.

Karen Megay-Nespoli

ESSENTIAL CHARACTERISTICS OF ELEMENTARY LEVEL TEACHERS

The role and responsibilities of elementary school teachers have changed with the years. Teachers have been conventionally viewed as dispensers of knowledge and academic skills, but teachers in the twenty-first century are viewed as facilitators or managers of information. Teachers have become intellectual leaders who create learning opportunities for students to demonstrate acquired knowledge and skills (Solomon and Firetag 2002).

Teachers have a powerful and lasting influence on students. Teachers directly affect how students learn, what they learn, and how much they learn. Student achievement has been linked to teacher effectiveness. Effective teachers exhibit common characteristics, which will be reviewed and discussed below in two sections. First, personal characteristics will be presented, followed by professional characteristics.

PERSONAL CHARACTERISTICS

Caring

Caring can be defined as bringing out the best in students through encouragement. Caring includes such qualities as trust, honesty, and patience. Teacher attributes that demonstrate caring include listening, understanding, empathy, gentleness, warmth, knowledge of students as unique individuals, and genuine love of children (Johnson 1997).

Listening

Successful teachers are good listeners. The act of listening involves paying close attention to and under-

standing what the student is saying. Listening encourages trust, honesty, and humility. Listening carefully to what students say shows students that teachers care about them as unique individuals. Children want to be nurtured, they value teachers who are kind, gentle, and encouraging, and achieve more when teachers are good listeners.

Understanding and Knowledge

Effective, caring teachers understand and know their students. Teachers know each child individually, understanding their likes and dislikes, personality traits, and personal situations that may affect their behavior and academic performance. In addition, teachers understand their students' academic strengths and weaknesses, learning styles, and educational needs. Teachers respect each student's right to confidentiality and prevent situations in which students lose respect in front of their peers. Many teachers are willing to talk about their own personal lives and experiences while maintaining appropriate teacher-student roles. Caring teachers know and understand the whole child and are perceived as being more effective by students (Thomas and Montgomery 1998).

Empathy

The ability to recognize emotions and to identify with the feelings and thoughts of another describes empathy. Empathic teachers are able to understand others' points of view, perspectives, and feelings. Empathy legitimizes the teacher as a person and encourages a teacher-student relationship that enhances student learning.

Equity and Respect

Equity and respect have been identified as important characteristics of effective teachers. Effective teachers practice gender, racial, and ethnic fairness, they avoid using sarcasm, and prevent students from situations that may embarrass them in front of their peers. Other examples include understanding the facts before deciding on discipline, not holding the entire class responsible for the actions of a few students, and offering all students the opportunities to participate and to succeed (National Association of Secondary School Principals 1997).

Social Interactions with Students

Social interactions between teachers and students contribute to student learning and achievement. Interacting with students socially also increases self-esteem by fostering feelings of belonging to the class and the school. Teachers often attend school-sponsored activities such as musical productions, concerts, and sporting events. This demonstrates interest in students' lives beyond the classroom. Opportunities to socialize allow a teacher to make positive, caring connections with students. Teachers behave in a friendly and personal manner, are willing to share jokes, and demonstrate a good sense of humor. Information gathered at these social activities helps teachers to individualize and successfully challenge students.

Teacher Enthusiasm and Motivation

A teacher's enthusiasm for learning, teaching, and subject matter has been shown to encourage student achievement. High levels of motivation in teachers in the primary grades related to high levels of achievement in students (Darling-Hammond 2001). Teachers can bring out the best in their students by encouraging them to take responsibility for their own learning, setting higher standards, assigning challenging coursework, and providing reinforcement.

Attitude Toward Teaching

Teachers who exude positive attitudes about life and teaching are more successful. They believe all students can learn. They believe they must know their students and their subject. They must provide differentiated instruction or employ a multitude of strategies to reach their students. The teacher establishes positive attitudes and perceptions about learning, which helps the learner to feel comfortable, increases self-concept, interest in subject matter, and desire to learn more. This is a particularly important characteristic for elementary school teachers to have, as the desire to learn is necessary in the latter grades.

PROFESSIONAL CHARACTERISTICS

Content Knowledge

Strong content knowledge has been identified as an essential element for successful teaching. Subject matter knowledge positively affects teaching perfor-

mance. Teachers with subject matter knowledge are better able to teach beyond the textbook material, involve students in student-directed activities, and engage in meaningful discussions. A strong content background helps teachers in planning and organizing units of study and lessons that are well sequenced and interactive. Students perform better when their teachers have a strong subject area concentration.

Teacher Attitudes

Most educators are convinced that teacher attitudes play an important part in the teaching process. Attitudes have a direct effect on behavior and determine how we view ourselves and interact with others. Teachers must acknowledge their own feelings in order to understand and sympathize with their students' feelings. An attitude toward subject matter is also important. Teachers who are enthusiastic about their subject will motivate their learners. In addition, teachers' attitudes toward children, peers, and parents are vital. A teacher's attitude toward and expectation of students is a powerful influence on whether a student learns. Attitudes toward peers and parents can affect professional success. Keeping a positive and open attitude toward parents, teachers, and administrators will help teachers to feel more successful.

Teacher Experience

Teachers develop from novices to masters at different rates, taking from five to eight years to master the craft of teaching. The ability to apply knowledge, to be able to improvise, to be flexible and adaptable indicate a teacher's expertise. Teachers with more experience demonstrate better planning skills, use numerous teaching strategies, and differentiate learning activities. Experienced teachers know and understand students' learning needs, styles, skills, and interests better than novice teachers. Teaching experience has up to 30 percent beneficial effect on student academic performance.

Practical Knowledge

Personal practical knowledge includes understanding of teachers' beliefs, insights, and habits that enable them to do their job. Teachers use this knowledge to solve problems, resolve conflicts, and simplify the complexity of their work.

Karen Megay-Nespoli

ESSENTIAL ELEMENTS OF ELEMENTARY SCHOOLS

A school is an important social institution. Schools are organized to promote student growth and development. Schools play many roles and have several responsibilities associated with these roles.

Schools are responsible for transmitting specialized academic knowledge to learners. The amount of available knowledge is vast and teaching time is limited. Elementary teachers build the foundation of a child's knowledge upon which to build later.

One function of the school is to prepare students for the world of work. In the elementary grades students are exposed to different areas of study and topics. Through exposure and experience students realize interests in certain areas. They develop varying levels of expertise that later help them in seeking career options.

Schools foster social and group relationships. Learners acquire socially appropriate patterns of behavior. In the early elementary grades they learn to share, take turns, work and play with peers in addition to other skills. Later, they learn about being a part of a larger group, the school, by participating in school events, sports, and clubs. This helps learners to assimilate into the work place and other larger organizations.

Furthermore, schools transmit certain values, beliefs, and norms that are broadly supported in society. Teachers struggle to respect learners' different family and cultural backgrounds, while transmitting certain common perspectives to all students.

ESSENTIAL ELEMENTS

Philosophical Foundations

Philosophy provides educators with a framework for organizing schools and classrooms. It helps to answer questions such as what are schools for, what subjects should be taught, how students should learn, and what methods and materials should be used.

An elementary school program aims to educate and nurture learners. The programs philosophy reflects the intellectual development and personal needs of the young learner. It reflects a set of shared beliefs

and includes a commitment to: educating the whole child, providing a variety of learning experiences, ensuring all students achieve at higher levels, providing a nurturing and caring environment for learners, and fostering partnerships with families and communities.

Organization

Elementary schools are organized to promote academic excellence and support personal development. In most cases elementary schools house grades kindergarten through grade six. Class size is kept small in order for each student to receive individual and personal attention. One teacher is responsible for the education of a group of common students and classes are structured to create close relationships between students and teachers. In addition, elementary schools provide supportive services for their students such as guidance counselors, social workers, and health professionals. Special services are also provided for students who qualify; these may include teachers who work with learners who have emotional or physical handicaps, reading and math specialists, and teachers who work with gifted and talented learners.

At the elementary level parents are encouraged to become involved in a variety of school activities. Studies have shown that parent's participation in school activities helps their child's achievement (Cameron and Lee 1997).

Programs

Elementary educational programs are challenging, rigorous, and comprehensive. This is achieved by having an up-to-date written curriculum to guide teachers in all of the content areas. Furthermore, the educational program provides a set of learning skills that are common across grade levels and content areas. These learning skills are taught and reinforced in each grade and subject area. Performance expectations are also important. These performance expectations are explicit and are developmentally appropriate for the students. Last, educational programs need an assessment component where diagnostic assessments are administered on a regular basis to monitor the learning of each student.

Instruction

Classroom instruction is appropriate to the need and characteristics of elementary learners. Knowledgeable teachers use instructional techniques that attend to the unique individual needs and developmental characteristics of elementary learners. Teachers have a deep understanding of the content areas they teach, differing learning approaches and strategies. They involve students in the learning process and encourage them to make choices, question, and experience things in order to learn and grow. Technology is used to enhance learning and activities are varied to hold student interest. Teachers use flexible grouping, peer tutoring, and cooperative learning groups to enhance social and interpersonal skills. Teachers work closely with parents and school personnel to help students acquire the necessary subject matter. Classroom assessment is used to measure individual student growth as well as to monitor and plan instruction. Teachers strive to match instruction to the students varied learning styles.

Leadership

The last essential element of elementary schools is leadership. Strong educational leadership encourages and facilitates growth. Elementary school leaders know and understand the needs, developmental characteristics of elementary students, and the subject matter that student are exposed to. Leaders understand appropriate instructional approaches and diverse teaching strategies used with elementary level students. Strong educational leaders have high expectations for students and teachers. They involve faculty in decisions that affect students. Leaders encourage teachers to take risks, to question, and to try new approaches. They encourage teachers to continue as learners themselves and to grow professionally. In addition, they facilitate and cooperate in planning and providing professional training and staff development opportunities.

All of these elements of elementary schools are essential to ensure that all students achieve at high levels and develop as unique individuals.

Karen Megay-Nespoli

THE ELEMENTARY SCHOOL CURRICULUM

Curriculum can be defined as what a student should know and be able to do. A curriculum specifies by what point students should have mastered specific skills and performances. This is known as the scope and sequence of the curriculum. The United States does not have a national curriculum. Control of the schools is reserved to the states. It is at the state level where curriculum is developed. The states, in turn, give local school districts some control over what is taught and how it is taught.

Elementary education provides the basics: reading, writing, arithmetic, natural and social sciences, health, physical education, art, and music. Elementary education also helps to build a sense of national identity and citizenship in children.

ELEMENTARY SCHOOL CURRICULUM TYPES

The Explicit Curriculum

The explicit curriculum is the curriculum found in curriculum guides, courses of study, textbooks, and other formal educational experiences (Vallance 1995). The explicit curriculum includes what teachers are expected to teach, what learners are expected to learn, and what schools are held accountable for. The explicit curriculum at the elementary level is organized around broad fields such as language arts, social studies, mathematics, and the sciences.

Language arts include reading, writing, listening, speaking, spelling, and penmanship. It is one of the largest curriculum areas and one that requires a great deal of time in the early elementary grades. The teaching of reading is crucial to a child's success in school. Time is spent reading and discussing stories and other forms of children's literature. Controversy surrounds the teaching of reading. Some school districts and teachers prefer the phonics approach while others prefer the whole language approach. Yet, other districts use a combined approach using both phonics and whole language approaches.

The second largest part of the elementary curricu-

lum is mathematics. Students must learn basic computational skills. These include addition, subtraction, multiplication, and division, measuring, and graphics. A current focus includes solving word problems and written explanations addressing the steps taken to solve the word problem.

Social studies curriculum presents an integration of selected elements of geography, history, economics, government, and sociology. It is presented sequentially, gradually leading children from their family and neighborhood to the larger world. Critics of the social studies curriculum argue that American students lack knowledge and understanding about other nations and cultures. They feel the curriculum focuses mainly on the United States. Other critics feel that geography should be taught as a separate discipline since American students perform poorly on geographic questions.

Science in the elementary curriculum consists of integrated concepts from the natural and physical sciences, such as biology, chemistry, physics, and earth science. Science in the elementary classroom focuses on hands-on experiments, field trips, and demonstrations. Students are taught to use the scientific inquiry method where they hypothesize, observe, record data, and draw conclusions. Critics feel that the science curriculum lacks strong foundational knowledge in the sciences. Supporters defend the scientific inquiry method and stress the importance for students to develop a sense of science as a process rather than only being able to recall specific scientific facts.

The elementary level curriculum also includes music, art, games, safety and health issues, as well as physical education and fitness, which involve strengthening students' motor skills. Computer-assisted instruction, computer literacy, and other technologies used in the elementary level classroom will also shape future curriculum as we move forward as a high-tech nation.

Integrated Curriculum

Integrated curriculum is popular at the elementary level. Integrated curriculum refers to relating concepts and skills across disciplines (Carter and Mason 1997). Teachers might have students read about a social studies topic, relate it to the events in a historical novel, and then write a historical journal entry based on what

they have learned. These activities integrate social studies and English language arts. Integrating curriculum increases the relevance of content by making real life connections with the topic, which in turn helps students to remember material. Opponents of integration believe that deeper understanding of the topic is sacrificed in the integration process.

Implicit Curriculum

Another dimension of the elementary curriculum is called the implicit curriculum or hidden curriculum. This represents its unstated and unintended aspects. It is reflected in the ways teachers present the content, the kinds of routines that are established, the climate of the classroom, and unstated values and priorities that shape the school day (McCaslin and Good 1996).

The implicit curriculum is just as important as the explicit curriculum. Students learn to raise their hands rather than shout out an answer, they learn that making a mistake is part of the learning process, and they learn how to get along with their classmates. Teachers' actions will help students to learn these things. Students also learn which academic subjects teachers value by the emphasis they place on the subject. These messages reflect the implicit curriculum and are an important part of the students' total learning experience.

Extra-curriculum

Extra-curriculum refers to the learning experiences that extend beyond the student's formal studies. In other words, activities that do not earn academic credit—such as sports, clubs, and musical theater—are considered extra-curriculum. Research has shown that schools with well-developed extra-curricular activities are more effective. Furthermore, students who participated in extra-curricula activities tend to be motivated and get better grades than those students who do not (Coladarcci and Cobb 1995). Extra-curricular activities offer valuable experiences for students to learn and grow. They also satisfied a student's need to be a part of a group and feel successful outside the classroom.

Moral and Character Education

Two areas that have recently been added to the elementary curriculum are moral and character edu-

cation. Moral education is value free, emphasizing the development of a student's moral reasoning. Through the use of moral dilemmas and classroom discussions students are taught to problem solve and bring about changes in the way they think with respect to moral issues.

Character education emphasizes moral values such as trust, honesty and citizenship and how these values can be translated into behaviors. Instruction in character education emphasizes the study of values and the practice of them in and out of school. Respect, courtesy, and compassion are amongst the traits that are taught to students (Jacobson 1999).

The Standard Movement

The standard movement of the later 1990s has also impacted the elementary curriculum. This movement has required more standardized testing to determine whether students are performing at specified levels in key academic areas of reading and mathematics. Opponents argue that this movement encourages teachers to teach for the test rather than teaching for the development of the whole child. Others argue that it is necessary to ensure that all children master the basics of reading, mathematics, and writing that will help them succeed in the future. The standards movement has had a definite impact on the elementary curriculum. According to teachers, the curriculum is more demanding and teacher expectations are higher.

Karen Megay-Nespoli

UNDERSTANDING THE ELEMENTARY SCHOOL STUDENT

Diverse best describes the population in American elementary schools in the twenty-first century. According to the United States Department of Education (National Center for Educational Statistics 2001), one in every three students nationwide is identified as a minority. In several major cities this rate is even higher.

Diversity within the elementary school includes students of different ethnicities, races, religions, lan-

guages, and exceptionalities. Diversity is both a strength and a challenge to educators. While diversity brings richness to the classroom, it also requires instruction that is responsive to the backgrounds of these individual learners.

To plan an effective school program, elementary teachers must gather accurate information about minority learners, be committed to the idea that all students can learn, acknowledge their own perspectives about these learners, and be able to accommodate and modify teaching practices. The more a teacher respects and responds to student differences, the greater the chance of success for these students at school. Success builds student confidence, which leads to positive attitudes toward school and teachers.

DIFFERENT FORMS OF STUDENT DIVERSITY

Racial Diversity and Gender

Race refers to a group of people who share certain physical traits such as body structure, facial features, and skin color. Members of a certain race have common experiences and perceptions of society that impact the classroom. Achievement is influenced by social and economic factors. In the United States a parent's education level and socioeconomic level are predictors of educational success. Racial minorities often do not have these advantages. Teachers seek the best methods and materials to help these students. Communication and parent participation also help to improve achievement for racial minorities.

Gender Diversity

Gender differences in educational experiences are also found to be common. Teachers give more attention to boys. In general teachers expect less from girls. This is particularly true in the areas of math and science. Other biases have been found in textbooks, educational activities, and classroom interactions. Early experiences with gender bias can hinder girls' achievement later in middle and high school. Teachers need to address gender bias and ensure all students have an equal chance to succeed (Sadker, Sadker, and Klein 1991).

Ethnic Diversity

Ethnicity is often referred to as a group of people classed according to common traits, customs, values, and traditions. Each ethnic group has its own inherited cultural beliefs, norms, and attitudes. Not all ethnic groups believe in the value of an education. The teacher's task is to provide developmentally appropriate instructions that value ethnic diversity and foster achievement.

Language Diversity

Language is the key to learning and communicating. Students who do not understand or respond appropriately will not be academically successful. Language barriers are one of the greatest obstacles facing elementary classrooms. Success in school depends upon an individual's command of the English language. Personal income increases with education; it is therefore essential for students to master the English language. Teachers must prepare students to be competent in standard English. Since many families immigrate to the United States with young school-aged children this task falls to the elementary teacher.

Religious Diversity

Students who attend public schools practice many different religions. The place of religion in schools is regulated by the Constitution. Teachers must respect the separation of church and state. Teachers cannot teach religion or ridicule other religions. Religious diversity allows for respect and tolerance of other types of religion. In the elementary grades there are numerous holiday celebrations. These calendar holidays present the opportunity to learn how others celebrate as well as the similarities and differences within religions.

Exceptional Learners

Exceptional learners are those who have special or unusual characteristics. Learners who have disabilities or are gifted are considered exceptional learners. Exceptional learners are now included in the regular classroom and receive services during the school day. The speech therapist, occupational therapist, social worker, school nurse, school psy-

chologist, or the resource room specialist provide services.

Physical Diversity

Learners with general or physical health impairments have some sort of physical or medical problem that can affect their performance in the classroom. This can include students who have had surgery or have broken an arm or leg. Each situation will vary and modifications can be made based upon the individual situations.

Visually Impaired and Blind Learners

Learners with visual impairments or blindness can learn well in the regular classroom with modifications. Often these learners are provided special equipment such as braille writers, computers, and tape recorders to help them learn. Readers may be provided for these students.

Hearing Impaired and Deaf Learners

Hearing-impaired and deaf learners have difficulty producing speech and acquiring language skills due to their hearing loss. Some students can read lips and teachers need to face them when speaking. Other students use hearing aids and others have the teacher use a small microphone to enhance the sound. Teachers use more visuals such as an overhead projector, computer, or PowerPoint presentations with hearing impaired and deaf students. In some cases an interpreter who uses sign language is assigned to work with them.

Orthopedically Impaired Learners

Orthopedically impaired learners have limited physical abilities. These children may use wheelchairs or

other special equipment. Safety is a concern and teachers may need to make provisions for the special equipment.

Emotionally Disturbed Learners

The behavior patterns of these learners interfere with their development as individuals and their ability to form and maintain relationships. These learners have low self-esteem, have trouble making decisions, and often feel isolated from their peers. Teachers try to build on success by setting clear expectations and helping them to understand that their behavior has consequences.

Learning Disabilities

Students with learning disabilities have difficulty using mental processes required to understand written or oral language. Learners have trouble reading, writing, listening, and spelling, or with basic mathematics operations. Teachers help these students learn organizational skills and highlight key ideas for them. These children work best in smaller groups, and with highly structured lessons.

Gifted Learners

Gifted learners have outstanding intellectual or creative abilities that need to be nurtured by special programs. Learners are identified by multiple criteria such as test scores, writing samples, and teacher recommendations. Programs for gifted fall into two categories: enrichment or acceleration. Enrichment programs allow students to explore various topics in depth. Acceleration allows students to move through material at a quicker pace by allowing them to skip grades or take courses with older learners.

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MIDDLE LEVEL EDUCATION

The middle school movement has been declared “one of the largest and most comprehensive efforts at educational reorganization in the history of American public schooling” (George and Oldaker 1985, 1). In 1989 the Carnegie Task Force on Education of Young Adolescents noted, “Young adolescents face significant turning points” (p. 8). While *Turning Points* seemed to set the stage for continuing discussion and debate on the nature and character of middle level education, the call for middle level reform was not new. Earlier reports called for the need for something different to happen in the way school was organized. For example, the Committee on College Entrance Requirements, commissioned by the National Education Association (1899), wrote that “the most necessary and far-reaching reforms in secondary education must begin in the seventh and eighth grades in our schools” (p. 659). This commission noted that the seventh grade was a “natural turning point in the pupil’s life, as the age of adolescence demands new methods and [a] wiser direction” (p. 659).

While much of the debate focused on whether or not to keep eight years of elementary schooling and four years of secondary schooling, high dropout rates were blamed on the difficult transition from elementary to high school. The first response to the problematic eight-then-four-year organization of schools was the creation of the junior high. Appearing in the first decade of the twentieth century, junior highs were hailed for their ability to prevent dropouts and to prepare students for the job market. The hope was that the curriculum, as well as the students, would be invigorated by the new organizational arrangement.

Concurrent with these developments, early psychologists, like G. Stanley Hall (1904), called upon educators to address the developmental needs of their students. Hall’s studies influenced Americans to accept the fact that the field of education should be

grounded in psychology and that adolescence should be given scientific study. The development of this new science of individual differences provided another justification for the development of the junior high. In 1918, the Commission on the Reorganization of Secondary Education recommended the new organization in its annual report:

We, therefore, recommend a reorganization of the school system whereby the first six years shall be devoted to elementary education designed to meet the needs of pupils approximately 6 to 12 years of age, and the second six years to secondary education designed to meet the needs of pupils approximately 12 to 18 years of age. The six years devoted to secondary education may well be divided into two periods that may be designated as the junior and senior high periods. (pp. 12–13)

What is important to remember from this junior high period is the recognition that schools were to understand and respond to the particular nature of the adolescent while attempting to continue the influence of the home. According to George and Alexander (1993), “The junior high emerged, originally, as an attempt to satisfy the call for a richer curriculum than the elementary school was able to offer, and a more personal atmosphere than the high school was able to develop” (p. 285).

By the early 1960s much of the literature on the junior high noted that such schools had turned into “miniature high schools” (Johnson et al. 1994). Junior highs had become “pale imitations of senior high schools” (Grooms 1967). Aided by additional sociological and psychological research during the 1950s and 1960s, educators judged the junior high school organization as inappropriate for young adolescents who are psychologically, socially, emotionally, intellectually, and physically at a very different place than adolescents.

Eventually, in the early 1960s the call to reform the junior high had evolved into a call for the creation of the middle school. This call was furthered with the publication in 1965 of W. M. Alexander's *The Junior High: A Changing View*; in 1966 with D. H. Eichhorn's *The Middle School*; and in 1969 with W. M. Alexander's *The Emergent Middle School*.

In 1965, the National Education Association (NEA) defined middle school as: "The school which stands academically between elementary and high school, is housed separately (ideally in a building especially designed for this purpose), and offers at least three years of schooling beginning with either grade 5 or 6" (p. 5). Later the National Middle School Association (NMSA) would define the middle schools as consisting of grades "mainly 6–8 . . . but also 5–8, 5–7, and 7–8; based on developmental needs (social and academic) of young adolescents, organized by interdisciplinary teams, with flexible organizational structures, using varied learning and teaching approaches" (1995, 1).

SOLIDIFYING THE MIDDLE SCHOOL CONCEPT: THE NEED FOR A CLEAR RATIONALE

In 1969 the Association for Supervision and Curriculum Development (ASCD) established the Council on the Emerging Adolescent Learner. In 1974, after much work by both formal and informal working groups, the Executive Council of ASCD appointed a group and charged them with "developing a paper for the Association identifying the rationale and significance of the American middle school and stressing the kinds of programs appropriate for emerging adolescent learners" (ASCD 1975, v). In 1975, ASCD published *The Middle School We Need* that reasserted the need to develop schools around the needs and characteristics of young adolescents. Recommendations such as team teaching, individualized instruction, and flexible scheduling were suggested.

In 1973, the National Middle School Association (NMSA) was created. In 1982 (revised in 1995) *This We Believe: Developmentally Responsive Middle Schools* was published. This position paper sets forth ten essential elements or characteristics of the middle school. They include:

- (1) Educators knowledgeable about and committed to young adolescents,
- (2) a balanced curriculum based on the needs of young adolescents,
- (3) a range of organizational arrangements (flexible structures),
- (4) varied instructional strategies,
- (5) a full exploratory program,
- (6) comprehensive counseling and advising,
- (7) continuous progress for students,
- (8) evaluation procedures compatible with the nature of young adolescents,
- (9) cooperative planning, and
- (10) a positive school climate. (NMSA 1995, 11)

In 1985 the National Association of Secondary School Principals (NASSP) Council on Middle Level Education released *An Agenda for Excellence in Middle Level Education*. Focused on twelve areas (e.g., climate and culture, student development, school organization, curriculum, learning and instruction, transition, client-centeredness), this document aimed at building school programs responsive to the needs of students. In order for middle schools to achieve academic productivity, middle schools should be organized:

- (1) So that decisions are made at the lowest possible level in the organization . . . by teams of teachers working closely together with students and other school personnel.
- (2) So that the effects of size are minimized, large schools should be broken into smaller units or families. Schools should be organized around teaching teams that plan and work with clearly identified groups of students, thereby assuring that every student is well known by a group of teachers.
- (3) With a class schedule that allows the greatest amount of uninterrupted learning time for teams of teachers working with groups of students. Teachers should be given maximum control over how instructional time is allocated and used.
- (4) With advisory groups of teachers and parents participating in important decisions about building goals, budget priorities, and school climate. (excerpted from NASSP 1985, 10–11)

In 1989, when the Carnegie Task Force on Education of Young Adolescents issued *Turning Points: Preparing American Youth for the 21st Century*, this document noted that:

A volatile mismatch exists between the organization and curriculum of middle grade schools and the intellectual and emotional needs of young adolescents. Caught in a vortex of changing demands, the engagement of many youth in learning diminished, and their rates of alienation, substance abuse, absenteeism, and dropping out of school begin to rise. (pp. 8–9)

In short, *Turning Points* challenged middle schools to be places where close, trusting relationships with adults and peers create a climate for personal growth and intellectual development. To accomplish this, middle schools were to:

- (1) create small learning communities for learning,
- (2) teach a core academic curriculum,
- (3) empower teachers and administrators,
- (4) staff middle schools with teachers who are expert at teaching young adolescents,
- (5) improve academic performance of students,
- (6) re-engage families in the educational process, and
- (7) connect schools with communities.

According to *Turning Points*, these seven components would work collectively to ensure the success of all students. Unfortunately, many middle level practitioners and researchers did not understand the ecological nature of this reform initiative. Many schools began changing the structure of their programs, adding such activities such as interdisciplinary teams and advisories. Few schools adopted the reform as a total package. While it seems common sense to assume that schools would respond to the needs of their students and create developmentally appropriate learning environments, it is evident from the history of middle level reform that schools are slow to change. But Carnegie did offer grants to twenty-seven states that submitted competitive plans for middle school improvement. These grants helped to turn the recommendations of *Turning Points* into reality—bridging the gap between theory and practice.

In 2000 the Carnegie Corporation of New York issued a report, *Turning Points 2000: Educating Adolescents for the 21st Century* (Jackson and Davis 2000). Ten years after the release of the original *Turning Points* (1989), this report asserted as core values the beliefs that: (1) the primary purpose of middle grades education is to promote young adolescents' intellectual development; (2) adolescents' intellectual, ethical, and social development requires strong, supportive relationships; and (3) successful middle grades schools are equitable with high outcomes for every student. Jackson and Davis, authors of the report, noted that the most important changes from the original report included: (1) ensuring the success of every student; (2) a greater emphasis on teaching and learning; (3) a curriculum grounded in academic standards; and (4) families and communities becoming inextricably linked to the work of schools. While the original *Turning Points* provided a framework for middle grades educational reform, *Turning Points 2000* provided valuable guidance to practitioners interested in implementing the model.

Finally, in 2003 the National Middle School Association released the third version of its position statement, *This We Believe*, now subtitled "successful schools for young adolescents." The new publication placed a strong emphasis on the courageous and collaborative leadership needed to ensure the successful implementation of the middle school concept. It also emphasized the holistic nature of the reform initiative since most middle level practitioners and scholars had been adopting and implementing, as needed, only parts and pieces of the reform model. Additionally, *Research and Resources in Support of This We Believe* (Anfara et al. 2003) was written to provide practitioners and policymakers with the research that supports the reform.

What should be obvious from this discussion is that a very consistent collection of ideas about what constitutes a good middle school emerged. The number of middle schools increased. According to the Department of Education Statistics (1995), there were 9,573 middle level schools by 1993/1994. This amounts to approximately three middle schools for every junior high in existence. The most recent figures (Bradley and Manzo 2000) document the existence of 16,000 middle schools and

only 2,000 junior highs. But all too often the change was in name only and many middle schools continue to operate as “transitional schools” (Manning 1993).

THE REFORM PENDULUM SWINGS AGAIN

Middle schools are on the defensive. Recent articles dealing with middle level education have been replete with accounts of what is happening, especially in reference to curriculum and student achievement. Called the “weak link” in the K–12 education chain, *Education Week* published two articles attacking middle schools. One was titled “A Crack in the Middle” (Killion and Hirsh 1998) and the other was “Muddle in the Middle” (Bradley 1998). Tucker and Codding (cited in Bradley 1998) referred to middle schools as “the wasteland of our primary and secondary educational landscape.” In short, the middle school model has come under attack for supplanting academic rigor with a focus on students’ social, emotional, and physical needs.

Most of the recent attacks cite evidence from studies like the Third International Mathematics and Science Study (TIMSS) and the National Assessment of Educational Progress (NAEP). TIMSS is the largest international comparative study of educational achievement to date—with approximately 500,000 students from forty-one countries. Students from three distinct target populations are assessed: (1) nine-year-olds (typically grades three or four), (2) thirteen-year-olds (in grades seven and eight), and (3) students enrolled in the final year of secondary schooling. Focusing on the thirteen-year-old population, the international comparison suggests a general improvement in U.S. science scores from a 1991 assessment that placed American middle school students below average. But middle school performance in mathematics remains below the international average. In mathematics, twenty countries outperformed the United States, thirteen performed similarly, and seven scored below the United States. In science, nine countries outperformed the United States, sixteen performed similarly, and fifteen scored below.

Among the findings drawn from the Third International Mathematics and Science Study are the following:

- (1) Eighth-grade mathematics classes in the United States are not as advanced and not as focused as those in Japan and Germany.
- (2) Topics taught in U.S. eighth-grade mathematics classrooms are at a seventh-grade level by international standards.
- (3) The content of U.S. mathematics classes requires less high-level thought than classes in Germany and Japan.
- (4) U.S. mathematics teachers’ typical goal is to teach students how to do something, while Japanese teachers’ goal is to help their students understand mathematical concepts. (excerpted from Mid-Atlantic Eisenhower Consortium for Mathematics and Science Education 1997)

Reviewing the TIMSS results, Silver (1998) found “a pervasive and intolerable mediocrity in mathematics teaching and learning in the middle grades.” (p. 1). Likewise, newspaper and magazines were filled with reports of middle level students stagnating in seventh and eighth grades, leaving them unprepared and unmotivated for more rigorous high school classes.

While TIMSS was designed primarily to make international comparisons, the National Assessment of Educational Progress (NAEP) was designed specifically to measure longitudinal achievement and related demographic trends in U.S. education. NAEP data reveal that U.S. students have improved in math and reading achievement from the 1970s to the present, though science achievement remains at a level similar to that found in the early 1970s. Achievement trends for thirteen-year-olds differ by performance quartile. Most of the achievement gains in reading have occurred within the upper quartile, though some of the gains are in the middle two quartiles. The performance gap between white and black students in math, reading, and science, after narrowing in the 1980s, has widened slightly across the 1990s.

Additional evidence that alarms middle school advocates comes from a variety of sources. In 1998 Johnston and Williamson investigated four communities to identify the concerns and issues of parents regarding middle schools. The analysis of 1,900 surveys, 400 interviews, and 350 exit interviews revealed that parents were concerned with: (1) the pervasive

anonymity in middle schools; (2) the format and content of the curriculum; (3) the lack of rigor and challenge of the curriculum; and (4) poor instructional techniques.

Some evidence points to the lack of focused preparation for middle level teachers and administrators. Bradley (1998) wrote, "A majority of middle-grades teachers, meanwhile, were prepared either to teach elementary or high school. Most were licensed to teach elementary school, leaving them unprepared to handle more complex academic content" (p. 40). Other reasons for the current attack on middle level schools stem from the current emphasis on accountability and its reliance on high-stakes testing as the measure of student performance.

Vincent A. Anfara Jr.

MIDDLE LEVEL CURRICULUM AND ASSESSMENT

Middle level curriculum is what students learn or could learn through their involvement in formal schooling, including classes, clubs, advisory programs and other guidance, student government, and athletic programs. Middle level curriculum within classes or courses will be the focus of this entry. Middle level assessment provides opportunities for students to demonstrate how well they have learned; for example, paper-and-pencil tests, projects, portfolios, journals, presentations, debates, performances, and so on. Middle level instruction, the focus of the next entry, is how students learn and can include, among other methods, lecture, demonstrations, hands-on activities, and discussions.

Curriculum appropriate for young adolescents relates to their needs, interests, and concerns. It draws on rigorous academic standards for what students should know and be able to do; challenges students to stretch their boundaries (and their wings) by, for example, requiring the use of higher order thinking; and it integrates content across subject area lines to blur the distinctions between the real world and school. Appropriate curriculum also provides opportunities for young adolescents to explore their own

talents and preferences, contribute to their communities, and try out various pursuits that may drive their learning and activities for a lifetime (Jackson and Davis 2000; National Middle School Association 2003). Assessment strategies for young adolescents are continuous, providing frequent feedback to students and teachers that can be used to support student learning; appropriate to the learning task, yielding relevant evidence of students' progress toward objectives for their learning; and varied, including both informal and formal strategies and ensuring that neither teachers nor students rely too much on any single type of measure as evidence of student progress or the lack thereof.

In theory and in practice, middle level curriculum, assessment, and instruction are intertwined, each affecting the others. The notion of "backward design" provides a concise framework for the discussion of curriculum, assessment, and instruction and their relationships to one another. Backward design highlights decisions regarding what to teach (the curriculum); how to tell if the students have learned (assessment); and what methods (instructional strategies) will engage students deeply in learning and prepare them to demonstrate what they have learned (Wiggins and McTighe 1998). This framework is called backward design as an acknowledgement that, traditionally, educators have often begun their planning with instruction, targeting favorite activities, then matched the activities to curriculum, often defined as the textbook, before considering assessment. Backward design, in contrast, starts with a focus on what students should know and be able to do, then choosing assessment methods that will allow students to provide evidence of what they have learned, and finally tailoring instruction to prepare students to provide that evidence of their knowledge and skills.

MIDDLE LEVEL CURRICULUM

History

Backward design begins with curriculum, deciding what to teach. Decisions about what to teach in the middle grades (grades 5–8) have been and continue to be fraught with controversy. Since the idea of middle level education was introduced in the late nineteenth century (see the entry, "The History of the Middle School"), educators, politicians, community members,

parents, and students have often disagreed about the purpose of schooling for this age group; for example, preparation for college, preparation for the work force, preparation for active citizenship, and/or preparation to become caring and ethical adults. Those disagreements about purpose have led to disagreements about what should be taught at this level.

Higher education leaders like Charles Eliot, then Harvard president, provided the initial push for a distinct school for young adolescents. In his 1888 speech to the National Education Association (NEA), Eliot argued for earlier introduction of college preparatory courses in hopes of better preparing youth for the university and lowering the age of college entry. Bolstered by the reports of several NEA and U.S. Bureau of Education committees recommending increased academic rigor in grades 7–9 (e.g., Committee of Ten on Secondary School Studies 1893; Committee on Economy of Time in Education 1913), the junior high school's curriculum mirrored that of high schools, with the inclusion of biology, foreign language, algebra, and physics. Prior to the advent of the junior high, the upper elementary grades (6–8) typically represented a rehash of information and skills highlighted in the early years of school, dominated by the “rote and repeat” strategy for mastering the basics of reading, writing, and arithmetic (Davis 1996).

The introduction of the Carnegie unit early in the twentieth century only strengthened the junior high school's mimicry of high school courses and schedules. To gain acceptance into college, students had to accumulate Carnegie units in certain subjects, with each unit requiring seat time of approximately forty–sixty minutes per day, five days a week, for one school year. To accumulate the fourteen Carnegie units typically required for admission to college, students enrolled in academic courses like English, mathematics, foreign languages, history, and science over the course of four years (Tyack and Tobin 1993). Those four years of Carnegie unit accumulation included (and still include) ninth grade, which had been part of most middle level schools up until the last twenty years or so. Carnegie units and their focus on college preparation have thus driven the subject-specific focus of middle level classes for nearly a century, and the forty–sixty-minute blocks of time those units demand provide an inflexible structure for class schedules that determines how much content teachers and students can address each day in each subject.

Though college preparation has been a dominant force, preparation for the work force and active citizenship have also been critical in the evolution of the middle level curriculum. The high dropout and low retention rates among early adolescents led educators like Calvin Woodward to criticize the public school system for its apparent over-attention to college preparation at the expense of those students who might pursue other avenues to working adulthood. According to education historian Lawrence Cremin, Woodward argued that educators should put the “whole boy in the school” by offering manual or vocational training in addition to the liberal arts (1961, 28). As foreshadowing of middle school proponents' calls for relevant curriculum and exploration, Woodward felt that demonstrating the connections between academics and application would help young people maintain their interest in school, make better career choices, and take their places in a better-educated work force as adults.

In the first half of the twentieth century, public secondary schools faced a rapid rise in student enrollments, with immigrants from many countries adding to the numbers. Public schools seemed an obvious means for introducing American culture and citizenship to new residents, and the inclusion of citizenship education became another part of the junior high school's curriculum. For some junior high schools, beginning in the 1930s, the progressive movement also helped shift the curriculum toward preparation for citizenship in a democracy. The progressives, many of them educators, advocated a “core” or general education curriculum that dissolved subject boundaries to focus on problems that crossed subject lines, fostered understanding and competence, and structured the school day around longer blocks of time intended to free up teachers and students from the tyranny of bells ringing every forty-five minutes to interrupt learning. According to two surveys conducted by Grace Wright (1950; 1958), by the 1950s, about 10 percent of junior high schools reported using a core curriculum and almost half structured the day into longer blocks of time. However, the Soviet Union's launching of the space satellite Sputnik in 1957, coupled with McCarthyism and the Cold War in the 1950s, helped sound the death knell for many progressive education initiatives, including those that had touched the junior high school. The “space race,” which began in earnest after Sputnik, engendered a

renewed focus on academics, particularly mathematics and science, which left little room for dissolving subjects or scheduling boundaries.

As the nation turned “back to the basics” in middle level curriculum in the early 1960s, many former junior high school advocates (e.g., Van Til, Vars, and Lounsbury 1961) began to express their discontent with the educational structure they had helped to develop. In his memorandum to school boards across the country, James Bryant Conant (1960) of Harvard came down particularly hard on the junior high’s tendency to imitate the high school, arguing that junior highs had no sound educational reasons for offering graduation ceremonies and interscholastic (between schools) athletic programs. Gordon Vars (1965) attacked the junior high school’s intense focus on specific disciplines, formal and didactic instruction, and an undue emphasis on college preparation. He worried that the developmental characteristics of young adolescents were trampled beneath the weight of heavier textbooks and high school rituals that resulted in “too much, too soon” (p. 188). As educators pointed out the mismatches between the characteristics of young adolescents and the kinds of experiences those students were having in public schools, new proposals for educating young adolescents began to emerge. The 1970s and 1980s saw the birth and rapid growth of a “middle school movement,” that has as one of its hallmarks an approach to curriculum that explicitly ties content to students.

Today

Though controversy over curriculum in middle grades schools still rages, two current sets of recommendations for improving middle grades schools—each grounded in research, theory, and practice—form the basis for this discussion of today’s middle level curriculum. In its most recent vision statement, *This We Believe: Successful Schools for Young Adolescents* (2003), the National Middle School Association argues that curriculum for young adolescents should be relevant, challenging, integrative, and exploratory. In *Turning Points 2000: Educating Adolescents in the 21st Century* (2000), Anthony Jackson and Gayle Andrews Davis recommend that curriculum be grounded in standards for what students should know and be able to do, relevant to the concerns of adolescents, and based on

how students learn best. Both documents thus call on middle level educators to make decisions about what to teach based on the unique needs, concerns, and interests of the young adolescents they teach.

Turning Points 2000 contends that the entire curriculum—including what is addressed, how it is addressed, and in what sequence—should be organized around important concepts and questions. In the landmark 1999 publication of the National Research Council, *How People Learn: Brain, Mind, Experience, and School* (Bransford, Brown, and Cocking 1999), the research described demonstrates that experts within any given field organize their knowledge not around lists of facts or formulas but around concepts, that is big ideas, with the implication that school curriculum should also be organized around concepts to facilitate student learning.

States and professional associations for educators typically organize academic content standards for what students should know and be able to do by discipline or subject—standards for language arts, standards for mathematics, etc. Nearly every state has its own unique content standards for four disciplines—language arts, mathematics, science, and social studies—at all grade levels K–12. Some states organize their content standards explicitly around concepts; others tend to rely more on lists of facts, figures, and skills, with the concepts to be implied or inferred from the lists.

Both *Turning Points 2000* and *This We Believe* call for integrating curriculum across disciplines and around key concepts, while ensuring that teachers and students maintain rigor by drawing upon the relevant academic content standards. For schools that understand the power of big ideas for deepening curriculum study within a discipline, using that power to show connections across disciplines is a logical step. Concepts and essential questions that cross disciplines can be the driving force of integrated curriculum design (Jacobs 1989; Texas Education Agency 1999). Essential questions and concepts help students remember facts and topics, because these overarching ideas give students a hook for organizing the seemingly trivial into meaningful patterns (Erickson 1998; Tomlinson 1998). Young adolescents are ready to seek out patterns; to make connections as they try to figure out the world around them and their place in it. In fact, James Beane (1997) maintains that the most powerful sources for concepts and questions are young adolescents’ concerns about

themselves and social issues. He points out that personal and social concerns are likely to frame the way young people already organize their knowledge and experiences, making curriculum structured around those concerns more relevant to students.

Challenging curriculum gives students choices and responsibility related to their own learning. Those choices are particularly important in motivating adolescents who are at risk of school failure (Baker 1996; Benard 1993). Exploratory curriculum provides meaningful experiences, grounded in real life, that allow young adolescents to try out different ideas, hobbies, and academic and career pursuits. Examples include music, art, drama, journalism, and job-shadowing opportunities in which a student spends a day with an adult professional engaged in an occupation of interest to the student.

Service learning provides opportunities to make middle level curriculum simultaneously relevant, challenging, integrative, and exploratory. According to Elizabeth Pate (2002), service learning is a curriculum model that intentionally connects students' academic knowledge and skills to real-life problems through service to address a community need. Particularly when done democratically, giving students a voice in making decisions about what community need to address and how, service learning allows students to "live" the curriculum by using the knowledge and skills gained in their coursework to identify and tackle a problem, learn from the community they serve, and reflect on their learning and its impact on themselves and the community.

MIDDLE LEVEL ASSESSMENT

Assessment is the process of gathering information or evidence regarding student learning. Historically, assessment of learning in middle level schools has mimicked assessment in high school, which in turn mimics the college level: paper-and-pencil tests, quizzes, and research papers have dominated for decades. To this more formal, paper-driven repertoire, teachers have added informal assessments (e.g., observations, students' verbal responses to questions), though generally students' grades have relied heavily on the results of the more formal assessments. Given the focus, described above, on college preparation as a purpose for middle level education, the weight given to these traditional assessments in middle level

schools seems fitting. For most of the twentieth century, young adolescent students, like their older counterparts, were required to demonstrate how well they have learned through their performance on paper-and-pencil tests or examinations.

In today's middle level schools, those examinations frequently include standardized tests, often state or federally mandated. Students' scores on those tests increasingly have an impact on student retention and placement in classes (e.g., remedial, advanced) and, under the provisions of the No Child Left Behind Act of 2002, on funding and other resources provided to middle level schools.

Both *This We Believe* (NMSA 2003) and *Turning Points 2000* (Jackson and Davis 2000) argue that assessment should be designed to provide ongoing, useful feedback, to both middle level students and their teachers, on what students have learned. This feedback should be used to improve teaching and learning, not just audit performance, and should be garnered in a variety of ways, including but not limited to informal gauges of student progress like class discussions and observations; traditional tests and quizzes that provide snapshots of student learning; interviews, conferences, and surveys that gather evidence by asking students to provide it directly; and performance tasks and projects that are more complex and authentic to the extent that those more complicated assessments draw on real life and real problems as engines or drivers of the work.

In addition to being varied and ongoing, effective assessment connects directly to curriculum and instruction, meshing perfectly with what students are to learn. To create those connections, backward design's first stage involves deciding what is to be learned (curriculum) and its second stage requires determining what evidence will best demonstrate that learning (assessment). Appropriate evidence is thus tied directly to curriculum—what students should learn. According to Grant Wiggins and Jay McTighe in their 1998 book, *Understanding by Design*, curriculum can be divided into three categories or levels: knowledge and skills worth "enduring understanding," those that merit mastery, and those with which students should just become familiar (p. 10). Dividing curriculum into those three categories can help prioritize the content to be addressed within any particular unit of study and determine the assessment methods that make the most sense given the kinds of knowledge and skills students

will need to demonstrate as proof of their learning. For example, students can exhibit their familiarity with names, dates, formulas, and other facts worth being familiar with, on traditional tests and quizzes and through informal assessment methods like their responses to teacher questions. Though tests and quizzes can still be helpful, performance tasks and projects that are more open-ended and complex can be particularly revealing means for students to demonstrate their mastery of a framework, like the elements of a story, and their enduring understanding of a concept like hubris.

P. Gayle Andrews

MIDDLE LEVEL INSTRUCTION

Middle level instruction is *how* students learn and includes all the activities, lessons, readings, discussions, and other strategies for gaining knowledge and skills in which students engage. Middle level curriculum is *what* students learn or could learn, and assessment allows students to show *how well* they have learned that content. Instruction, then, is the means for moving students from point A (curriculum) to point B (assessment).

Effective middle level instruction must connect to the curriculum, which should be relevant to young adolescents, integrative (crossing subject areas), exploratory, and based on academic standards for what students should know and be able to do. Instruction must connect to the varied and ongoing assessments that will allow students to demonstrate their learning; and to the students: their learning needs, interests, skills, and cultural and experiential backgrounds (Jackson and Davis 2000; National Middle School Association 2003). Successful instruction must connect simultaneously to these three different aspects of teaching and learning, making instructional decisions complicated and multifaceted. In middle level schools, the multiple dimensions of young adolescent development add to the complexity of instructional decisions. Methods that work well with younger students do not necessarily translate to young adolescents in the midst of rapid cognitive, social, emotional, and moral changes (see the entry on the young adolescent for more on development).

Curriculum, assessment, and instruction are

closely interrelated, with each affecting the others. Instructional decisions are the final stage of backward design that, unlike traditional practice among many educators, calls for starting with curriculum, choosing assessments designed to let students demonstrate what they have learned, and then designing instruction that will prepare students to demonstrate their learning (Wiggins and McTighe 1998). This entry will focus on instruction, the final stage of backward design.

HISTORY OF MIDDLE LEVEL INSTRUCTION

Like middle level curriculum and assessment, middle level instruction mirrored the high school and college levels for most of the twentieth century. Characterized by direct instruction, lecture, and worksheets, the instructional strategies in use in many middle level classrooms reflected the high school's imitation of a college classroom. The junior high school—the level of schooling that resulted from many different, and often conflicting, calls for better educating of young adolescents for college, the workforce, and active citizenship—was truly a *junior* high school, a scaled-down version of the high school's adherence to subject area disciplines, teacher-centered instruction, and rites of passage to adulthood like graduation for ninth graders, highly competitive interscholastic sports, and even proms.

The Impact of the Child Study Movement on Middle Level Instruction

The early advocates for the junior high school did not envision miniature high schools as the result of their call for a distinct level of schooling for youth ages ten to fifteen. Thomas Briggs (1920) and Leonard Koos (1927) instead drew upon the philosophies typical of G. Stanley Hall's child study movement in their descriptions of the ideal junior high. Hall, a renowned psychologist, introduced the notion of child study, that is, scientific study of the child through careful observation at various stages of development. In an effort that helped launch all the research since on young adolescents, Hall studied the characteristics and behavior of youth in New York City. In his groundbreaking description of that research, *Adolescence* (1904), Hall described early adolescence,

marked by the onset of puberty, as a time of rapid and significant changes in cognitive, emotional, social, and moral development. Hall and his colleagues also established the connections between child study and instructional decisions by arguing that if educators had a better understanding of child development, like that occurring during early adolescence, they would be better able to support that development (Webb, Metha, and Jordan 2000).

According to Stephen Gross (2002), modern conceptions of effective middle level instruction can, in fact, be traced directly to the child study movement. In the 1920s, Thomas Briggs and Leonard Koos envisioned a middle level school characterized by instruction designed to recognize and accommodate the unique needs of young adolescents. In the 1940s, with the number of junior high schools rapidly increasing, William Gruhn and Harl Douglass called for instruction fitted to the needs, interests, and capacities of the child in their landmark text, *The Modern Junior High School* (1947). William Van Til, Gordon Vars, and John Lounsbury echoed Gruhn and Douglass in their 1961 plea for instructional strategies tailored to young adolescents' individual needs, a plea that highlighted the difference between the vision of junior high instruction that both Briggs and Koos had outlined and the reality of teaching in the miniature high schools that junior highs became. In his 1965 analysis of the junior high school, middle school advocate Gordon Vars particularly decried the junior high's heavy reliance on formal and didactic instruction.

Lev Vygotsky's book, *Mind in Society* (1978), also echoes the child study movement and forms part of the foundation for current thinking about effective middle level instruction. Vygotsky introduced the idea that every child has a distinctive zone of proximal development (ZPD), a zone between what the child can do currently and what the child would be able to do with the support of a professional educator. To help students cross the zone from where they are to where they could be, Vygotsky recommended "scaffolding." Like the scaffolds builders use to support buildings while under construction or renovation, Vygotsky argued that educators should provide, and then gradually remove, scaffolds, or supports, to help students attain their respective zones of proximal development.

Carol Ann Tomlinson, professor at the University of Virginia, is today's heir apparent to the child study movement. In her work on differentiated instruction

(described in more detail below), Tomlinson describes the necessity of knowing students well enough to make decisions about what instructional methods will best support their learning. In a direct connection to Vygotsky, Tomlinson (2003) says that middle level teachers should provide scaffolding to support individual students in doing their best work.

The Impact of Tracking and Teacher Preparation on Middle Level Instruction

In addition to the child study movement, two other important legacies have affected the nature of middle level instruction: the placement of students into different classes or "tracks" based on ability, and the teacher preparation experienced by most middle level teachers.

Like John Dewey and other progressives in favor of child-centered schooling, Leonard Koos (1927) argued for equalizing educational opportunity in the junior high school by adjusting to individual differences. The focus on children's differences shifted as the junior high school's actual instructional placement practices selected out those students considered capable of going on to college and those thought to be on direct routes to the workplace. The junior high used criteria—including test scores, teacher recommendations, and grades—for sorting and sifting students that generally reflected society's patterns of discrimination by class (Perlstein and Tobin 1988). Once students were placed on a track of courses (e.g., vocational, remedial, college preparatory), they typically did not switch tracks, nor, as a result, destinies. The progressive educators who had wanted schools to pay attention to individual differences and each child's learning trajectory were dismayed by the actual practice of ignoring that trajectory in favor of keeping individual children grouped, and in effect trapped, on the same track with the same destination.

The historic pattern of teacher preparation for middle level educators partially explains the tendency of those educators to teach to the mean, using the same strategies for all students without regard to individuality. Most educators in junior highs (and in today's middle schools) have not been specially prepared to teach young adolescents (McEwin, Dickinson, and Jenkins 2003; Scales and McEwin 1994). In fact, many junior high and middle school teachers have been trained in the secondary

education tradition in which subject-area disciplines and the “open students’ heads and pour” models of instruction reign supreme. In the shadow studies (i.e., shadowing students over the course of a school day) supported by the National Association for Secondary School Principals, John Lounsbury and his colleagues confirmed that many middle grades students experienced classroom teaching that made them passive recipients of content (Lounsbury and Clark 1990; Lounsbury and Johnston 1988). Without specialized training highlighting the connections between instructional decisions and early adolescents’ individual needs and capabilities, the tailored and interactive instructional practices that Briggs and Koos envisioned in junior high schools were crushed by the weight of the high school’s traditions (Davis 1996).

Middle Level Instruction Today

A recent survey of middle level schools across the country (McEwin, Dickinson, and Jenkins 2003) revealed that young adolescents still experience more direct instruction than any other type (85–88 percent across fifth through eighth grades), and that most middle level students experience tracking in one or more subjects (78 percent). This reality contrasts sharply with current recommendations for instructional practice in middle grades classroom.

In the National Middle School Association’s (NMSA) most recent vision statement, *This We Believe: Successful Schools for Young Adolescents* (2003), the association calls for multiple teaching and learning approaches that respond to the diversity of young adolescents. NMSA contends that middle level students should be actively engaged in their learning, including participating in decisions about what content to address and how. In an echo of Vygotsky’s zone of proximal development, the 2003 edition of *This We Believe* also argues that teachers should work together to design instruction that challenges students appropriately, and those instructional activities should group students in varying ways: for example, sometimes by student interest, sometimes by learning style, and sometimes by ability, though the latter should not represent a permanent group placement as tracking practices often have.

Carnegie Corporation of New York’s influential

report, *Turning Points 2000: Educating Adolescents in the 21st Century* (Jackson and Davis 2000), sounds remarkably similar to NMSA’s 2003 vision in its recommendations for effective middle level instruction and also reflects the child study movement’s focus on the unique needs of individual learners. In drawing on the best of research and practice during the 1990s, *Turning Points 2000* advocates instruction that ensures the success of every student in meeting high standards. With regard to instruction, the authors recommend that teachers:

- Meet students where they are, since people learn best by constructing new knowledge and skills based on what they already believe and understand (Bransford, Brown, and Cocking 1999; Brooks and Brooks 1993; Zemelman, Daniels, and Hyde 1998);
- Center classrooms on students because they also learn best when instructional activities reflect who they are (e.g., cultural and personal background and experiences) and allow them to exercise some control over their learning (Tomlinson 1999; Wiggins and McTighe 1998; Neumann, Marks, and Gamoran 1995);
- Engage and support students in challenging work since people learn best when they have to stretch to succeed (Vygotsky 1978);
- Diagnose and then attend to students’ varied learning needs by purposefully differentiating content (curriculum), process (instruction), and product (assessment) (Tomlinson 1999);
- Stress experiential learning that makes authentic connections to the students’ personal and social concerns and to the world beyond the classroom (Zemelman, Daniels, and Hyde 1998; Neumann, Marks, and Gamoran 1995); and
- Encourage students to work collaboratively and to reflect on what they have learned (Zemelman, Daniels, and Hyde 1998).

Taken together, the recommendations for organizing middle level instruction in *This We Believe* and *Turning Points 2000* reflect a century’s worth of efforts to improve middle level teaching and learning. That century included the child study movement; the work of developmentalists who based their research on the child study movement like Jean Piaget, Erik Erikson, and Lev Vygotsky; and the current researcher

Jay McTighe and many others who are trying to make varied, relevant, engaging, and developmentally appropriate instruction a part of everyday life for young adolescents across the country.

P. Gayle Andrews

UNDERSTANDING THE MIDDLE SCHOOL STUDENT

Defined broadly, the middle school student is in fifth to ninth grade, typically ranging in age from nine to fifteen. While traditional research has described this stage of development as awkward, understanding the middle school student can be equally awkward and challenging. The intensity and range of changes and choices for middle school students rivals no other developmental stage, and the impact of context and student choices shape developmental trajectories into adulthood. Middle school students are learning how to be teenagers, a period of life that most view as negative or problematic. There is also a vast range for “normal” in terms of development for middle school students. While many test boundaries and struggle with developmental and contextual change, middle school students also make an important transition filled with unbridled opportunities.

A TRADITIONAL UNDERSTANDING OF MIDDLE SCHOOL STUDENTS

Early adolescence has only recently been identified as a distinct developmental stage and, therefore, it lacks a long history of research. Most human development textbooks will use middle childhood or adolescence to describe and distinguish development stages. Essentially, personal experience as a middle school student has shaped ideas about early adolescence rather than an extensive research base. Additionally, most of the scientific research that does exist has been on white middle class students, severely limiting our understanding of the influence of culture and diversity. For example, racial identity development is a concept that may be both an important influence and outcome of development in middle school. This limited attention to and lack

of specificity for middle school students or early adolescents is analogous to the difficulty in understanding the middle school student. For instance, middle school students themselves are aware of adults’ limited understanding, often feeling as if they are the only ones experiencing these developmental circumstances and that no one could possibly understand what they are going through.

The early research on this phase of development has traditionally been related to adolescence in general and characterized as storm and stress. Aside from infancy, no other phase of life is characterized by greater, more rapid, and diverse development than early adolescence. Middle school students have been called “transescents” and “bubblegummers” by researchers and “tweens” by the media. Most often the terms themselves do not distinguish this stage, instead describing it as prior to adolescence (preadolescence) or in between two stages. Peter Scales, developmental psychologist and director of the Search Institute, describes middle school students as “psychologically vulnerable, because at no other stage of individual development are they more likely to encounter and be aware of so many differences between self and others” (Scales 2003, 49). The self-consciousness at times can be debilitating, as peer comparison and acceptance, fads, and group belonging all contribute to feelings of industry or inferiority (the classic Erik Erikson stage).

This vulnerability to social competition and comparison extends to other realms of development as well. Physiologically, hormones and brain development are changing and interact with new environmental challenges. Physically, so many pubertal changes occur at different rates that middle school students struggle to accommodate and get comfortable in their own bodies. Uneven spurts of growth in weight, height, strength, lung capacity, bone structure, and sexual characteristics create a lack of coordination and a wide range of individual differences. Hormonal changes also create intense and extreme mood and disposition changes, often of varied duration. More recent research has further articulated the struggles of early adolescent females, who often struggle with more pronounced self-esteem losses, vicious competition in cliques, and assorted understandings and feelings toward menarche. Disordered eating and body image problems are also problematic. For example, developmental psychologist Janet Eccles

has demonstrated that early- or late-developing middle school students, particularly females, often undergo more peer scrutiny, are depressed, and have lower body image. Others have suggested that late-developing males also have increased risk for depression, conflict with parents, and a higher risk of being bullied. The timing of pubertal change is therefore salient for middle school students.

The impact of phenomena like peer influence and diverse individual development often introduce risk-taking and destructive behaviors such as bullying, sexual harassment, and challenges to authority. Both genders tend to be concerned about appearance and are often unprepared emotionally for emerging sexual feelings and norms. There is no set timetable for development in middle school, and patterns, sequence, and structure in terms of development are much less predictable. It is not surprising that middle school students struggle, are even obsessed with defining their own identities, as this can be very difficult to determine (e.g., role confusion) when in such a state of developmental flux.

This dual struggle looking inward (industry) and outward (identity) is compelling and often greatly influenced by context. For example, interesting transitions occur in families and schools. Inconsistent behavior and variation in mood are often a result of insecurities and a search for a burgeoning identity outside that of the familial unit. Middle school students begin to reject family rituals, crave privacy, experience increased power struggles, and question rules and authority. They prefer to deal with developmental tasks in private, and family is often rejected as the inhibiting source for the emerging independence. Conflict tends to peak (depending on timing of puberty and development of identity) during middle school years over continual day-to-day matters and wide-ranging issues. The American Psychological Association suggests it is also normal for adolescents to argue for the sake of arguing, jump to conclusions, be self-centered, and be overly dramatic. Middle school students move seamlessly between the desire to act as a child and the desire to be respected as an adult. Perhaps as a response to the increased rebellion and struggle for independence, parent involvement in schools drops considerably during the middle school years.

As the family dynamics evolve, a more abrupt ecological transition commences with the move from elementary to middle school. Several detrimental

outcomes (e.g., declines in self-esteem, declines in achievement and motivation) have been associated with the transition to middle school. Research speculates that the vulnerability of the developmental changes combined with considerable ecological change prompts declines in academics and social upheaval. While these declines can be mitigated by appropriate intervention and support, inevitable contextual change includes more students, more adult authority figures, and increased competition. Stress is a normal outcome for many middle school students as they manage the personal and contextual transitions, and students may disengage from school if the transition is not negotiated successfully.

Alongside family and school, community factors (such as socioeconomic status and available resources) can influence the development of middle school students. For example, religious institutions and the media can significantly impact outcomes such as substance abuse and expressions of sexuality. Middle school students seemingly flood malls, movie theaters, and community arenas to try out newfound independence and explore intimacy with peers and opposite-sex relationships.

The reciprocal, interrelated, and recurring interactions with development in self and ecology all contribute to a complex and dynamic understanding of the middle school student. While puberty and the environment contribute to the personal and social meanings of development, there is more to understanding the middle school student beyond storm and stress and the challenges associated with early adolescent development. The American Psychological Association suggests that most adolescents succeed in school, are attached to their family, and emerge from their teen years without experiencing serious problems. Through development, increased autonomy, and an adult understanding of the middle school student, they have an opportunity to progress through developmental tasks in healthy ways that shape optimal pathways into adulthood.

A CONTEMPORARY UNDERSTANDING OF MIDDLE SCHOOL STUDENTS

While the ebb and flow of development is a great concern to parents and adults who raise and work with middle school students, great opportunity also

dwells in this stage of development. The turbulent change is a state of reorganization, and independence is both natural and important. Peter Scales suggests that middle school students are “psychologically resilient . . . tend to be optimistic and have a generally positive view of their personal future” (2003, 49). Others have emphasized the more sophisticated sense of humor (e.g., sarcasm) that emerges with abstract thinking abilities. Depending on the situation, developing cognitive skills enhance students’ abilities to reason and allow them to think about the future, evaluate alternatives, take perspectives of others, and set personal goals. Meta-cognition, or the ability to think about one’s thinking, becomes more frequent among middle school students. Middle school students do not necessarily think about adult topics, but the way they think tends to be more adultlike. Middle school students can also be idealistic, showing consideration for feelings and rights of others (although this is not always applied to one’s self). This ability and energy leads to middle school students’ social concerns and energy invested in causes they identify as important. While some middle school students may not exhibit abstract thinking consistently, these developing capabilities move many students beyond egocentric thinking into conventional forms of reasoning.

Curiosity, insight, interpretation, and proposition all stimulate future idealistic thinking and moral dilemmas that are influential to an emerging identity. Career development and the construction of what students might become and who they would like to grow to be is more salient. In fact, many middle school students make their first career-related decision when making curriculum decisions for middle and high school. Positive career development in middle school includes exploration of self and careers, with a movement toward crystallizing potential career paths.

Like a traditional understanding, a contemporary view of puberty also recognizes the magnitude of adjustment in almost every realm of development. While the previous mean age of menarche was nearly thirteen in 1973, today girls show some signs of puberty as early as age seven and pubertal development typically extends from age ten to seventeen. There is some evidence that culture impacts puberty as well, as some cultures may have accelerated physical de-

velopment and there is some evidence that African-American students tend to cope and thrive more effectively with early development.

Metabolism changes and ravenous or peculiar appetites contribute to a need for daily exercise, nutritional guidance, and an understanding about body changes. Middle school students thrive on diverse (active, peer-oriented) learning experiences, physical activity to release energy, leadership and participatory activities, development of problem solving skills, and the need to investigate intense curiosities. Research has also suggested that many middle school students are more comfortable with the vast range of developmental changes when adults help prepare them and open communication lines about the impact of concerns over appearance. The abrupt and diverse change that students encounter is not necessarily a cause for storm and stress; rather middle school student awareness, understanding, and coping abilities that are fostered by peer groups and significant adults shape the middle school experience.

The increasing importance of peer groups often is visible in same-sex cliques and the exploration of intimacy. A budding interest in intimacy is often viewed as dangerous, and understandably so due to the consequences of poor choices (e.g., pregnancy, sexually transmitted diseases), and negotiating sexuality in relationships is complicated for middle school students. Romantic relationships are characteristically short in duration and often occur in group situations. While most early adolescents are trying to understand sex, little research has demonstrated high levels of engagement in intercourse. Additionally, healthy experiences of intimacy are important and enriching. In fact, negotiating intimacy is one of the most influential psychosocial learning processes in middle school that shape adult experiences. Most of the exploration of intimacy will come in intense friendships and peer groupings. These friendships and “best friends” fluctuate often, and the intensity of these relationships creates both pain and great joy. The peer group provides a sense of belonging, acceptance, helps develop social skills, helps solve problems, and provides a sense of independence from family.

While more explicit control over behavior by parents is normal, there is evidence that middle school students benefit greatly from consistent structure

from adults. Middle school students tend to learn social and sex roles through models like parents and other significant adults. This opportunity to help influence roles through exploration, confrontation of stereotypes, and guided socialization is important. While media and friends have tremendous influence over many middle school fads and trends, parents are still the major influence for morals and lifelong goals. Middle school students still prefer adult or parent guidance with important decisions, and feelings of competence are linked to emotional closeness and acceptance from parents.

The choices that middle school students make are articulations of independence and these bring about greater responsibility for these decisions. Risk taking is a natural behavior for middle school students and these explorations help shape identity, decisionmaking skills, and realistic assessments of self and the world. Although risk taking can be detrimental to developmental pathways (e.g., alcohol/drugs, pregnancy, school failure), challenging middle school students beyond capacities in constructive pursuits with guidance contributes to and is important to healthy development. Parents and adults help middle school students understand what choices mean in relation to self and others. In turn, conversations (rather than lectures) with middle school students can be equally rewarding for adults and parents.

Along with parental guidance, the influence of context and culture can also be influential and enriching for middle school students. The emergence and appropriate implementation of the middle school concept (instead of the junior high) has been designed to meet the needs of early adolescents and provide safe opportunities to achieve developmental tasks. Emerging developmental research on resilience, competence, and developmental assets also provide instrumental assistance in understanding the middle school student. For example, a stable, positive relationship with at least one caring adult has been shown in numerous research studies to be influential on the resilience of youth. The Search Institute's forty Developmental Assets outline external (e.g., positive family communication, service to others, high expectations) and internal (e.g., school engagement, integrity, cultural competence) assets that promote healthy youth development. Additionally, Janet Eccles advocates an appropriate stage or personal environment fit, where schools,

families, and community groups provide structures that are appropriate for the developmental needs of middle school students. These types of contextual supports potentially can ameliorate—or at least moderate—any storm and stress experienced by the diverse and abrupt change in the lives of middle school students.

CONCLUSIONS ON UNDERSTANDING THE MIDDLE SCHOOL STUDENT

There is no formal rite of passage into adulthood in the United States, although early adolescence and middle school is often recognized as the starting point. Reflecting on one's own junior high or middle school experience is not often pleasant. Our own experience creates bias in how we view middle school students today and shapes our reactions to understanding middle school students. Additionally, the context of society, schools, families, and communities are distinctively different (perhaps more risky) from when most adults were in junior high.

The personal drama and roller coaster ride that middle school students experience is based on diverse, abrupt developmental and contextual changes. Middle school students progress through this stage much like a two year old who searches for independence and control. The main difference is that middle school students seem to flourish most when they are publicly treated like an adult, while privately supported and nurtured like a child.

To understand today's middle school student, emerging information about development in early adolescence, how development is shaped by context in society today, and the diversity and uniqueness of individual change and choices must be considered. In terms of understanding and negotiating the gray areas with middle school students, it is typically less productive to directly bombard them with questions starting with the word "why." Rather, engaging them in nonjudgmental, open-ended conversation often opens the door for more understanding. While most middle school students would suggest it is impossible for adults to understand them, taking time to do so is engaging and has an impact on the developmental trajectory of youth.

Patrick Akos

ESSENTIAL CHARACTERISTICS OF MIDDLE LEVEL TEACHERS

Middle level teachers have the shortest amount of time with their students yet the greatest amount of pressure to get their students ready for the more challenging secondary school curriculum. Middle level teachers meet students during one of the toughest times in their lives thereby making it one of the toughest jobs to fill. Nevertheless, people are choosing this level of schooling for their teaching careers. What is it, then, that we can identify for them as essential characteristics that the middle school teacher needs to possess in working with young adolescents?

BACKGROUND

From its very beginnings, the National Middle School Association (NMSA), in its position paper *This We Believe*, articulated a vision of middle level education starting with “Educators committed to young adolescents” (1982). Throughout three subsequent iterations of its position, NMSA continued to list educators as the top priority (1992, 1995, 2003). Supporting that vision, *Turning Points: Preparing American Youth for the 21st Century*, the groundbreaking report published by the Carnegie Council on Adolescent Development (1989), referenced educators in each one of the eight ingredients articulated for the transformation of adolescent education. For example, to create a community of learners, *Turning Points* calls for teachers to be good listeners, effective advisors, and cooperative team players (pp. 37–42). A decade later in *Turning Points 2000: Educating Adolescents in the 21st Century*, Anthony Jackson and Gayle Davis (2000) examined how to improve middle grades education. They underlined the critical importance for middle grades schools to be staffed with teachers who are expert at teaching young adolescents. The essential characteristics of middle level teachers can be understood within the following five categories.

Middle Level Teachers Understand Young Adolescent Transitions

Students in the middle school years are particularly vulnerable to swift changes in their social and emotional lives, their cognitive skills, and their physical

growth. An understanding of the transitions of young adolescents equips the middle school teacher with characteristics effective in working with them. That is, middle level teachers recognize the developmental challenges of young adolescents, they offer understanding, and they are willing to take risks and make mistakes in the process of becoming more effective in working with their middle school students. A fundamental love for students during this stage of their adolescent growth is vital. Middle school students arrive with a variety of needs that must be addressed. Adaptability and flexibility are key characteristics needed in working with young adolescents. Relevancy of curricular content to real-life situations increases middle school students’ appreciation of the discipline. This requires that middle school teachers possess a variety of teaching strategies. Finally, middle school teachers must be involved in reflective practice. In order to succeed with this age group, teachers must be willing to try things, risk failure, learn from their mistakes, and try again.

In his book entitled *Teaching Ten to Fourteen Year Olds*, Chris Stevenson (1992) offers four generalizations teachers can trust in working with young adolescents: (1) every child wants to believe in himself or herself as a successful person, (2) every youngster wants to be liked and respected, (3) every youngster wants physical exercise and freedom to move, and (4) youngsters want life to be just.

Middle Level Teachers Know Themselves

Middle school students begin to recognize that their teachers are people too—with strengths and weaknesses of their own. Self-knowledge is especially significant for the middle school teacher. Middle school students seek out their teachers for counsel, investing in them a high degree of trust in the teacher’s ability to mentor and lead them through the turbulence of this phase of human development. Once it is established that the teacher is empathic, honest, and patient, thereby meeting the fundamental emotional needs of students, students’ motivation to learn increases.

Among the personal characteristics needed in middle school teachers is a sense of humor. Not only is it important for teachers to have a sense of humor, it is important for them to realize that kids at this age are developing a sense of humor of their own.

Laughter and fun are important factors for young adolescents in the learning process. Along with this, there is a basic love of life that teachers need in order to be successful with this age group. Middle school students are exploding with energy, therefore enthusiasm, empathy, patience, honesty, creativity, and spontaneity are qualities essential in teaching at the middle level. Nancy Doda, Paul George, and C. Kenneth McEwin in “Ten Current Truths About Effective Schools” (1987) presented five “truths” about the middle school classroom teacher:

1. Effective middle level teachers do not sit down while they teach. A standing, roving teacher has more opportunity to monitor student behavior. As well, the teacher models an active involvement in the teaching and learning.
2. Effective middle level teachers work to create lessons that bring students as close to the real thing as possible. Young adolescents are concrete thinkers and need concrete symbols to help them enter into the lesson.
3. Effective middle level teachers have a sense of humor. Middle level teachers keep the affect light when faced with the choice to laugh or scream.
4. Effective middle level teachers think big but teach small. With middle school students this is an option for quality versus quantity.
5. Effective middle school teachers work to weasel their way into the hearts of the young adolescents they teach. Middle school teachers do not underestimate the value of affection in creating bonds with their students. (excerpted, p. 5)

Middle Level Teachers Form Critical Relationships

Forming critical relationships is a key to teaching at the middle level especially. Time spent observing colleagues, either informally among grade partners or formally with mentors, is crucial to the development of characteristics effective at this level. Chief among the benefits to observing one’s colleagues are the additional instructional ideas gained in the process. Peer observations and team collaboration involve time, work, and a commitment from all involved.

In middle schools, critical relationships flow from colleagues to friends, from classroom neighbors to middle school team members, from a student’s teach-

ers to parent and family partners, from districtwide colleagues meeting to those one meets at local and national conferences, and from on-the-job mentors to teacher preparation and staff development opportunities. Developing collegial relationships often results in friendships, which nurture and nourish a desire to grow professionally as a teacher. Good communication skills, coupled with interpersonal people skills are essential for working with the variety of people one encounters in middle school.

Among the qualities necessary in middle level teaching, the ability to collaborate and cooperate in order to meet the interactive learning style of young adolescents is essential. Middle school teachers work together to deliver a curriculum that is exploratory, integrative, challenging, and relevant. There can be no turf wars in the middle school. In the same way, successful middle school teachers must enlist family involvement in a holistic approach to curriculum, instruction, and assessment in the teaching and learning enterprise.

Middle Level Teachers Manage the Classroom Environment

Classroom management requires organization and structure, that is, being prepared with lesson plans for the school day, unit plans for the week, and long-term plans for the year. It is not enough to be well trained in teaching methods and knowledgeable about your course content, or to be particularly good at managing your classroom; teachers need to be consistent. Consistency creates a rhythm that both frees students to learn and ensures that learning is happening.

While organization and consistency are crucial to managing the middle school classroom, respect among young adolescents is built upon the foundations of discipline and control. These factors allow students to gain insight into what is appropriate for them.

M. Lee Manning and Katherine T. Bucher, in their book *Teaching in the Middle School* (2001), offer guidelines for developing a personal theory of classroom management. A middle school classroom management system should:

1. reflect young adolescent development;
2. reflect the teacher’s beliefs about how classroom management should work;
3. be workable and efficient;
4. be equitable;

5. apply to all programs in the middle school curriculum; and
6. be professionally rewarding. (p. 143).

Middle Level Teachers Are Experts in Subject Content

The desirability of specialized preparation programs for teachers of young adolescents is not a new idea. Calls for such specialized preparation programs have been included in the literature for over eighty years and date back to the days of the junior high. In relation to middle schools today there is consensus regarding the appropriate nature of specialized middle level teacher preparation and the kind of licensure regulations needed. Additionally, as reflected in the performance-based National Middle School Association (NMSA)/National Council for Accreditation of Teacher Education (NCATE) middle level teacher preparation standards (NMSA 2001a), middle level educators generally agree about what middle level teachers should know and be able to do.

In defining experts for middle school classrooms, the *No Child Left Behind Act* (NCLB) of 2000 requires that states articulate certification standards for teachers serving the middle level. This comprehensive educational reform package guarantees a highly qualified teacher in every classroom. All teachers in grades 7–9 at the middle school level must have a middle level certificate in accordance with the content area they are teaching—middle level English, math, science, or social studies—or hold a secondary (usually, grades 7–12) certificate in that content area. Elementary certified teachers currently teaching in middle grades schools need to pass a Praxis test in the subject to which they are assigned. Teachers wishing to add one or more of the middle level content areas to their existing certificate may take the appropriate test. Secondary teachers may teach their certificate subject area in a middle level school. Preservice middle grades teachers are encouraged to seek certification in two of the four content areas.

SUMMARY OF ESSENTIAL MIDDLE LEVEL TEACHER CHARACTERISTICS

The agenda for college and university presidents, *To Touch the Future: Transforming the Way Teachers Are Taught*, set forth by the American Council on Educa-

tion (1999), established that the essential competencies of an effective teacher are command of subject, proper preparation in pedagogy, and high overall academic performance. Only a limited amount of research is available on the topic of characteristics essential for effective middle level teaching. Table 17.1 on the next two pages displays results of studies that cover a variety of methodologies and include a diversity of participants. In an article entitled “Preparing Teachers for the Middle Grades,” results of a study conducted by NMSA in 1981 identified seventeen characteristics associated with effective middle level teachers. In 1991 John Buckner and Frank Bickel took up the question “If You Want to Know About Effective Teaching, Why Not Ask Your Middle School Kids?” and designed a survey of twenty-seven descriptors, which they brought to middle level students for verification. Alfred Arth and his colleagues (1995) sought validation from middle level teachers and principals for the sixteen characteristics they considered distinctive of excellent middle level teachers, and published their results under the title *Middle Level Teachers: Portraits of Excellence*. Finally, in her work entitled “The Effective Middle School Teacher: Inwardly Integrated, Outwardly Connected,” Kathleen Roney (2001) identified characteristics that principals, teachers, and students say are essential in working with young adolescents. Three out of the four studies share the first fifteen characteristics listed in Table 17.1. The more recent study by Arth et al. added four characteristics, and Roney added six to top off the list at thirty-four. In short, the effective middle level teacher blends knowledge of young adolescents with knowledge of self in working with colleagues to create developmentally responsive middle level schools so that students acquire the “skills, knowledge, and personal competence . . . to be successful now and in the future” (NMSA 1995, 5).

Kathleen Roney

CSR MODELS FOR MIDDLE LEVEL SCHOOLS

The Comprehensive School Reform (CSR) program was implemented in 1998 by the United States Department of Education and authorized as Title I, Part

Table 17.1

Essential Characteristics of Middle Level Teachers

NMSA (1981)	Buckner and Bickel (1991)	Arth et al. (1995)	Roney (2001)
1. Positive self-concepts	1. Positive self-concepts	1. Self-confident	1. Self-aware and self-motivated
2. Knows subject matter	2. Knows subject matter	2. Interdisciplinary knowledge of subjects; depth of content knowledge in one or more areas	2. Being prepared with a knowledge base
	3. Maintains classroom control	3. Establishes and maintains disciplined learning environment	3. Being respectful through classroom and lesson management
4. Displays optimism	4. Displays optimism		4. Being positive
5. Shows enthusiasm	5. Shows enthusiasm		5. Shows enthusiasm
6. Demonstrates flexibility	6. Demonstrates flexibility		6. Adaptable and flexible
7. Acts spontaneously	7. Acts spontaneously		7. Has fun
8. Demonstrates caring	8. Demonstrates caring		8. Loves kids
9. Respects and accepts others	9. Respects and accepts others	9. Sensitive to differences; respects and celebrates others	
10. Good listeners and communicators	10. Good listeners and communicators		10. Good communication skills
11. Uses varied activities and materials	11. Uses varied activities and materials		11. Understands need for variety of teaching strategies
12. Promotes successful experiences	12. Promotes successful experiences	12. Dedicated to welfare and education of young adolescents	
13. Monitors learning	13. Monitors learning	13. Ensures all young adolescents will succeed in learning	
14. Structures instruction	14. Structures instruction	14. Utilizes wide variety of developmentally appropriate instructional strategies	
15. Understands young adolescent developmental characteristics		15. Makes decision based on understanding adolescent development	15. Understands young adolescent developmental challenges and changes
	16. Sense of humor	17. Works collaboratively	16. Learns to laugh with others
			17. Develops critical relationships with colleagues and teams

- | | | |
|--|---|--|
| 19. Adapts curriculum and instruction to developmental needs | 18. Evaluates fairly | 18. Varies evaluation techniques |
| 20. Addresses individual learning | 20. Addresses individual learning | 19. Committed to integrated curriculum |
| 22. Asks varied questions and promotes thinking | 22. Asks varied questions and promotes thinking | 21. Works closely with families |
| 23. Easy to understand | 23. Easy to understand | 21. Collaborates with parents and families |
| 24. Encourages self-responsibility | 24. Encourages self-responsibility | |
| | | 25. Understands and welcomes role of advisor |
| | | 26. Recognizes developmental goals of middle level education |
| | | 27. Develops positive relationships in variety of environments |
| | | 28. Acquires, creates, and utilizes variety of resources |
| | | 29. Patient |
| | | 30. Honest |
| | | 31. Creative |
| | | 32. Empathetic |
| | | 33. Circumspect |
| | | 34. Willing to learn from mistakes |

Source: Kathleen Roney. "The Effective Middle School Teacher: Inwardly Integrated, Outwardly Connected." In *The Handbook of Research in Middle Level Education*, edited by Vincent A. Anfara, Jr. Greenwich, CT: Information Age Publishing, 2001.

F, of the *Elementary and Secondary Education Act*. Its purpose was to help raise student achievement by assisting public schools across the country to implement effective, comprehensive school reforms that are based upon scientifically based research and effective practices. Although the funding for CSR comes from the federal government, individual states were allowed some flexibility in how the monies were distributed to their schools. Based on their specific needs for improvement, schools were permitted to select from state-approved lists of CSR models that they could implement. However, schools were held accountable for demonstrating progress in the federally mandated components of the CSR program and therefore were encouraged to select a school reform model based upon demonstrable research and effective practices.

The U. S. Department of Education recognizes many CSR models, but in the early stages of CSR in 1998, none of the approved designs focused primarily and specifically on the middle-grade levels (grades five through eight). Subsequently, several models were developed or evolved/adapted from existing elementary or high school designs to focus on comprehensive school reform for middle level schools, including nationally known and recognized models as well as regional “home grown” designs. The Catalog of School Reform Models, published by the Northwest Regional Educational Laboratory, lists all of the approved CSR models; however, their list is limited to only the CSR models that are available for implementation nationwide; there are no listings for locally developed models—those serving schools in a single district or state. The CSR models specifically designed to address comprehensive school reform in middle level schools are described and discussed below.

AIM AT MIDDLE-GRADES RESULTS

Developed by the Education Development Center and launched in 2000, the Association of Illinois Middle Schools (AIM) at Middle-Grades Results is a comprehensive school improvement program that assists middle-grades schools in becoming high-performing learning and caring organizations. AIM guides schools in becoming academically excellent, responsive to the developmental needs of young adolescents, and socially equitable. AIM schools improve learning and foster healthy development for all students. The goal of AIM is that all middle-grades

students meet challenging standards and are prepared to succeed at the next stage of learning and growing. During the 2003–04 school year AIM was implemented in schools in five states nationwide.

AIM schools agree to implement six key design elements, including (1) rigorous and developmentally responsive curriculum, instruction, and assessment; (2) a safe and healthy school climate for learning and development; (3) ongoing professional development that results in an inclusive and powerful learning community; (4) strong links between family, school, and community; (5) collaborative leadership; and (6) innovative use and integration of technology to support curriculum, instruction, assessment, and professional development.

AIM works with schools for three or more years to build the internal capacity for continuous improvement. They offer a number of key services to middle-grades schools so that all students achieve success. First, they assist in the establishment of a school Leadership Team (administrators, teachers, and parents) that is responsible for assessing the current status of teaching and learning in the school, building a shared vision, and creating the conditions under which school improvement can occur. Second, they establish and support faculty inquiry teams—small groups that meet regularly by grade level and/or discipline to reflect on and analyze teaching practice, student work, research-based approaches to curriculum, instruction, and assessment, and to reflect on results. Third, they conduct a Teaching for Understanding Institute—a professional development program that provides a formal structure for designing curriculum, instruction, and assessment aligned with performance standards at each grade level. In addition, they provide an annual leadership symposium and ongoing and intensive technical assistance.

DIFFERENT WAYS OF KNOWING

Different Ways of Knowing provides research-based, field-validated school improvement services and products developed by the Galef Institute, an educational nonprofit that helps schools nationwide enhance and accelerate their capacity to reach their goals for students and student groups.

This comprehensive school reform design helps teachers recognize and cope with the differences among students in the eleven- to fourteen-year-old age group. They train teachers to provide middle

grades students with academic experiences that are academically, developmentally, and socially responsive. They help schools form multiple small communities of learners so that every child is known by at least one adult who serves as mentor and guide. They work with teachers to integrate research-based best practices into curriculum, instruction, and assessment to ensure success for every student. They work with schools to improve student performance by embracing key elements that research suggests helps middle school students learn best, including small, supportive learning communities, cooperative learning strategies used throughout the day, meaningful and rigorous curriculum content, responsive support systems that assist students, programs that ease transitions into and out of the middle grades, and active family and community roles.

Different Ways of Knowing offers middle level schools a suite of services that are focused on supporting schools in six key areas: (1) planning standards-based curriculum, assessment, and instruction for every student and student group; (2) individualizing instruction to support student inquiry and self-directed learning; (3) teaching strategies that expert learners use in reading and writing to close the achievement gap; (4) teaching strategies that raise performance in mathematics to close the achievement gap; (5) integrating the visual, performing, literary, and media arts in all content areas to accelerate learning gains for all student groups; and (6) developing leadership to achieve required goals for student progress.

MAKING MIDDLE GRADES WORK

Making Middle Grades Work, the Southern Regional Education Board's (SREB) middle grades' initiative, is designed to help states, districts, and schools look at what they expect, what they teach, and how they teach young adolescents to prepare for success in further education. Making Middle Grades Work is a network of schools, districts, and states committed to implementing ten essential elements in a comprehensive improvement framework. The elements focus on a rigorous and challenging academic core curriculum for all students and on the teaching and learning conditions that support continuous improvement in student achievement.

With the support of the Edna McConnell Clark Foundation, SREB provides member states and schools

with technical assistance, publications, assessments, and networking services. As school sites identify the help they need to implement the framework, SREB links them to specific professional-development resources. A summer conference enables schools to learn what works with other middle-grade schools and to plan further actions to improve student achievement. There are over one hundred schools in sixteen states currently implementing Making Middle Grades Work.

The goal of Making Middle Grades Work is to raise the academic achievement of all middle grades students to at least the basic level as defined by the National Assessment of Educational Progress (NAEP) and to have an increasing percentage of middle grades students performing at proficiency levels as defined and measured by NAEP. To accomplish this goal, Making Middle Grades Work proposes: (1) that all students learn a rigorous core curriculum of mathematics, reading across content areas, English/language arts, science, and social studies; (2) students are taught by highly qualified teachers who hold a content major or minor in the subject(s) they teach; (3) teachers engage students through relevant, hands-on materials and activities; and (4) all students leave eighth grade prepared for success in a challenging and accelerated high school curriculum. Making Middle Grades Work will assist middle grades schools to implement the essential elements in the comprehensive improvement framework by creating key conditions that support improved academic achievement and by developing readiness indicators for students exiting the middle grades.

MIDDLE START

In 1994, the W. K. Kellogg Foundation, together with regional and national partners, launched Middle Start, a comprehensive school improvement effort that focused on improving the quality of teaching and learning in Michigan's middle-grade schools, particularly in schools and districts with high percentages of "at-risk" students. In 1998, Middle Start was approved by the Michigan Department of Education as a "home grown" comprehensive school reform model. The Middle Start National Center is currently housed at the Academy for Educational Development. A regional variant of Middle Start, Mid South Middle Start, was initiated by the Foundation for the Mid South in 1998 and works with middle

level schools in Arkansas, Louisiana, and Mississippi. Since 1998 nearly forty middle level schools in Michigan have selected Middle Start as their CSR model.

Middle Start has four guiding principles. *Reflective review and self-study* engages staff in ongoing inquiry into teaching and learning, using both internal and external reviews of student work, curriculum, instruction, and teacher assignment. *Effective small learning communities* promotes interdisciplinary teams at every grade level and teams of teachers meet during common planning time to set instructional priorities, develop interdisciplinary units, conduct reviews of student work to assess the team's direction and needs, and communicate with parents. *Rigorous curriculum, instruction, and student assessment* challenges a school to explicitly focus on improving student learning and achievement. The school matches rich curriculum with best instructional practices and exemplary assessment to realize the full potential of each student. *Distributed leadership and sustainable partnerships* cultivates sustainable partnerships with families, the district, the school board, local businesses, universities, and other community groups for the purpose of enhancing student learning.

Middle Start provides support to schools undertaking comprehensive school reform through monthly on-site coaching, high-quality professional development, the School Improvement Self-Study (developed by the Center for Prevention Research and Development at the University of Illinois), access to a regional partnership of agencies, universities, and advocacy groups, and ongoing leadership workshops and school networking conferences.

SUCCESS FOR ALL MIDDLE SCHOOL

Developed by Robert Slavin and his colleagues at Johns Hopkins University, Success for All Middle School is a model of middle school reform based on the Success for All (SFA) reading program—a comprehensive, effective, and replicable program for the elementary grades. Primary goals of the middle school program are to assess student strengths and weaknesses, fill in existing gaps in their skills, and provide a bridge to more challenging content with practical applications. The design also hopes to strengthen students' relationships with both family and community. The SFA Middle School design expects eventually to incorporate cooperative learning strategies into all subject areas and to

integrate language arts throughout the school day.

The SFA Middle School model believes that children in the middle grades learn best when learning communities remain small and supportive, curriculum content is both meaningful and challenging, family and community play an active role in education, responsive support systems are in place to assist students, and programs exist to ease students' transition both into and out of the middle grades.

The specific goals of the model are: (1) to increase the number of students reading at or above grade level by a school's annual yearly progress goals or better; (2) to produce integrated, academically rigorous curriculum to increase student achievement on performance-based measures in reading, mathematics, science, and social studies; and (3) to improve school climate by increasing attendance rates each year of implementation of the program, increasing students' academic self-concept and self-esteem, increasing parent and community involvement, and decreasing the number of suspensions and discipline problems.

The program includes a well-established curriculum including student materials and teacher manuals, ongoing teacher training, and follow-up support from SFA.

TALENT DEVELOPMENT

Talent Development Middle School (TDMS) is a national whole-school reform model developed by researchers, educators, and experienced curriculum writers at Johns Hopkins University in collaboration with middle school practitioners. It is specifically designed for urban middle schools that serve high-poverty populations. Talent Development Middle Schools implement standards-based, facilitated instructional programs in reading, English, language arts, mathematics, science, and U.S. history. Its goal is to provide all students the opportunities and support they need to achieve and to provide all teachers with the training and support they need to deliver standards-based instruction. The model is typically phased in over a three-year period. Currently it is being implemented in twenty-one schools in five states.

The Talent Development Middle School model contains eight fundamental components that transform a school into a high performance learning community by establishing the standards-driven curriculum, instruction, school organization, and pro-

professional development needed in order for all students to learn challenging academic materials and to prepare for successful futures. Key elements of the reform include: (1) student team literature, an innovative, thoroughly tested, and highly effective cooperative learning approach; (2) a research- and standards-based mathematics curriculum that blends skill building with problem solving; (3) a hands-on inquiry-oriented science curriculum linked to national standards and benchmarks; (4) a U.S. history course; (5) extra-help programs in mathematics or reading for students who need them in order to succeed at the challenging learning tasks they face; (6) innovations in school organization that allow teachers, students, and families to establish strong bonds and close, caring relationships; (7) a three-year career and education exploration course for sixth, seventh, and eighth graders; (8) the Partnership Schools model for establishing strategic school-family-community partnerships; and (9) focused and sustained professional development in reading/English/language arts, mathematics, science, and U.S. history, with follow-up in-school support by highly trained facilitators.

Facilitated instructional programs integrate state-of-the-art instructional materials, effective instructional practices, linked assessments, focused and sustained staff development, and in-classroom support. All of these elements work together in a systematic and sustained manner to realize broad-based achievement gains.

TURNING POINTS

Turning Points is a New American School (NAS) design for comprehensive middle school reform coordinated by the Center for Collaborative Education (CCE) in Boston, Massachusetts. It focuses on creating a professional collaborative culture and using database inquiry to improve teaching and learning for all students. Turning Points seeks to create high-performing middle schools, especially those serving high percentages of low-income students and students of color. The design is driven by one overarching goal—ensuring success for every student.

Turning Points is based on the Carnegie Corporation's 1989 report, *Turning Points: Preparing American Youth for the 21st Century*, and ten years of research and practice in middle schools across the country. The *Turning Points* report recognized the need to strengthen the academic core of middle schools and

establish caring, supportive environments that value adolescents. In 1998 Carnegie turned to CCE to develop a whole-school reform design that would be based on the research and work of the preceding nine years. CCE launched the National Turning Points Network in August of 1999, and in January 2000, Turning Points became a New American Schools comprehensive school reform design. The Turning Points design for comprehensive reform uses a network of regional centers in twelve states and is currently being implemented in nearly seventy schools.

Turning Points middle schools commit to a multiyear, systemic change process that is based on seven guiding principles framed in *Turning Points 2000*, the ten year follow-up to the Carnegie Corporation's seminal report (Jackson and Davis 2000). The seven Turning Points principles are the foundation for the design and creation of a strong middle school vision. The principles form a framework for creating middle schools that address the needs of young adolescents. Six practices translate these principles into effective action that, when approached in an integrated fashion, lead to significant and sustained improvement in student learning and achievement.

Turning Points provides schools with support to help implement comprehensive reform, including: thirty to thirty-five days of on-site coaching, site-based professional development and networking with teachers in other schools, the Turning Points Self-Study (developed and administered by the Center for Prevention Research and Development at the University of Illinois), conferences and institutes, access to publications and technology, and accountability and assessment of student learning.

Steven B. Mertens

STUDENT ACHIEVEMENT AND THE MIDDLE SCHOOL CONCEPT

Questions still abound regarding the implementation and effectiveness of middle-level reform. Has the reform of middle schools had the intended consequences of improved academic performance and socioemotional development? The issue of effective-

ness is made more public and exacerbated by the results of educational studies like the Third International Mathematics and Science Study (TIMSS). Arming themselves with findings from this study, educational researchers and policymakers questioned the “less than rigorous curriculum” alleged to exist in many middle schools, and characterized middle schools as “the wasteland of our primary and secondary landscape” (Tucker and Coddling, cited in Bradley 1998), “a crack in the middle” (Killion and Hirsh 1998), and a “muddle in the middle” (Bradley 1998).

This emphasis on linking the middle level concept to heightened student academic performance is not new. Long before the attacks appeared in *Education Week* in 1998, Ronald D. Williamson, J. Howard Johnston, and Laurel M. Kanthak (1995) commented, “Middle schools must accept the challenge of addressing student achievement. Student achievement must be given the highest priority in the mission of the middle level school” (p. 6). In their manifesto for middle-grades reform, Joan Lipsitz et al. (1997) wrote, “We speak with one voice, grounded in our collective experience and buttressed by compelling research data that demonstrate . . . that sustainable middle-level school reform is achievable” (p. 534). But grounded in realism they continue, “We have not seen the widespread dramatic improvement in academic outcomes we had hoped for” (p. 535).

Responding to her reading of *The Exemplary Middle School* by William M. Alexander and Paul S. George (1981), Jill F. Russell (1997) noted that there is the assumption that “according to middle-level theory, if the middle level philosophy is implemented, the outcomes of enhanced personal development, group citizenship, and achievement will be attained” (p. 170). But attempts to ascertain the relationship between middle-level reform (specifically the recommendations in *Turning Points* [1989]) and student achievement have yielded ambiguous and conflicting results. There are an insufficient number of studies, a lack of longitudinal studies, weak research designs, difficulties with comparing studies with conflicting designs, and problems with the effects of extraneous variables (like socioeconomic status) on outcomes (Van Zandt and Totten 1995).

Indeed, the landscape of this corpus of research is painted utilizing many different brushes and diverse styles with the resulting product being very confusing. But, as mentioned earlier, there is an urgency

regarding research in this area. Acknowledging this urgency, Robert D. Felner and his associates (1997) wrote, “Although a more well-developed research base does not, by itself, ensure more successful reform efforts, without such a foundation the progress and fruits of reform efforts will continue to be disappointing” (p. 41).

The inconclusive nature of the findings related to the effects of middle school practices on student achievement has been documented (see NMSA 2001b; Roney, Anfara, and Brown 2002; Van Zandt and Totten 1995). But this is not unusual in the realm of educational research. Reviewing the literature on many different educational topics will reveal research that supports, negates, or shows no difference in the relationship between the variables being studied. Importantly, the inconclusive nature of middle school research should not be adopted as a rationale for inaction or refusal to move forward in the restructuring of middle schools. There is, indeed, a promising body of research that demonstrates positive effects for their restructuring.

STUDENT ACHIEVEMENT AND HOLISTIC IMPLEMENTATION OF THE MIDDLE SCHOOL CONCEPT

Two major studies have been conducted that look at the reform of middle level schools and their holistic implementation of the middle school concept as delineated in *Turning Points* (Carnegie Council on Adolescent Development 1989). These include research conducted by Valerie Lee and Julia B. Smith (1993), and Felner et al. (1997).

Lee and Smith (1993) evaluated how middle school policies and practices influenced the students who attend them, focusing specifically on achievement, engagement, and equity issues. The sample for this study was drawn from the National Education Longitudinal Study (NELS) of 1988. Because of the nature of this database, Lee and Smith acknowledged that they are “not sure whether the sample of students in schools that reported that they engage in practices like heterogeneous grouping and team teaching actually encountered instruction in this way” (p. 180). Neither did they know the level of implementation of these practices. Specifically they looked at reduced departmentalization, heterogeneous grouping, and team teaching as a “com-

posite measure” of restructured middle schools.

Lee and Smith’s findings indicated that the elements of restructuring were positively associated with academic achievement and engagement with schooling of eighth graders. Students who attended schools that encourage team teaching evidenced higher achievement. Additionally, less grouping by ability and a less rigid departmental structure appeared to promote social equity in achievement among students. In relation to engagement, Lee and Smith found that “although attending restructured schools may positively influence academic engagement, this engagement may coexist with higher levels of at-risk behaviors” (p. 180).

Felner et al. (1997) conducted the most significant and compelling research that acknowledges the necessity of implementing *Turning Points*’ recommendations as a comprehensive reform initiative. This team of researchers has been studying what is now a network of more than seventy schools in Illinois since 1991. Schools participating in the Project Initiative Middle Level (PIML) network represent a full range of geographic, demographic, and size characteristics, including rural, suburban, and urban schools.

Felner et al. sought to “assess and evaluate the process of implementation of the recommendations of *Turning Points* for middle grade reform, as well as their impact on students’ academic achievement, socioemotional development, and behavioral adjustment” (p. 42). Of particular concern was the association between the levels of implementation of the reform that participating schools attained and relevant student outcomes. The core of the evaluation is a compressed longitudinal design, obtaining data on sets of schools that are at different levels of maturity (high, partial, or low) in reform implementation. The primary source of data is a set of annual surveys, the High Performance Learning Communities Assessments (HiPLaCes-A). These surveys are administered to teachers, staff members, students, administrators, and selected parents. Additional data are obtained from student records, attendance, and scores (reading, mathematics, and language arts) on local and state achievement tests.

Results of this longitudinal study indicated, “across subject areas, adolescents in highly implemented schools had higher achievement (as measured by the Iowa Test of Basic Skills and the California Test of Basic Skills)

than those in nonimplemented schools and substantially better than those in partially implemented schools” (p. 55). Felner et al. concluded, “broad-range enhancements and adjustment are not obtained until implementation is quite mature, comprehensive, and conducted with a high degree of fidelity” (p. 67).

THE MIDDLE SCHOOL CONCEPT: STUDENT ACHIEVEMENT AND IMPLEMENTATION

In contrast, there is a vast body of literature that focuses on individual components of *Turning Points*’ recommendations, such as teaming and advisory programs, and their effect on student achievement. A number of studies focus on the interdisciplinary teaming of teachers (e.g., Alspaugh and Harting 1998; Arhar, Johnston, and Markle 1989; Ashton and Webb 1986; Cotton 1982; Rosenholtz 1989) and its effect on student achievement. These studies help to demonstrate the ambiguous and inconclusive nature of this research.

Looking at the effects of interdisciplinary teaming, Joanne M. Arhar, J. Howard Johnston, and Glenn C. Markle (1989) found that the teaming of teachers increased student engagement in academic tasks, helped to clarify learning goals, and led ultimately to higher student achievement. Patricia T. Ashton and Rodman B. Webb (1986), as well as Susan J. Rosenholtz (1989), suggested an indirect relationship between teacher collaboration and improved student outcomes. John W. Alspaugh and Roger D. Harting (1998) studied the effects of interdisciplinary teaming versus departmentalization on student achievement in middle schools. Their findings indicated that no overall statistically significant differences were found for reading, mathematics, science, and social studies in grades six through eight in departmentalized versus teamed schools. But, significantly, the authors noted that teaming merits further investigation as a potential strategy for mediating student achievement loss associated with the transition to middle school. Kathleen Cotton (1982) concluded that neither interdisciplinary team organization nor the traditional departmental organization promoted greater student achievement. In 1992 Sally N. Clark and Don C. Clark, utilizing nine studies con-

ducted between 1964 and 1972, conducted a meta-analysis related to interdisciplinary teaming. They concluded that teaming was related to gains in student achievement.

THE MIDDLE SCHOOL CONCEPT: INVOLVED VERSUS NOT INVOLVED SCHOOLS

In this category research is examined that was done in Michigan by the Center for Prevention Research and Development (CPRD) and in North Dakota as part of the Middle Grade School State Policy Initiative (MGSSPI). Steven B. Mertens, Nancy Flowers, and Peter Mulhall (1998) looked at 155 Michigan middle schools that had high numbers of economically disadvantaged students and that were participating in the Middle Start Initiative funded in 1994 by the W. K. Kellogg Foundation. Surveys (the School Improvement Self-Study) were conducted in 1994/95 and in 1996/97 by the Center for Prevention Research and Development. This Self-Study uses twenty-four scales to measure progress in dimensions of reform including, for example, curriculum, school climate, instruction, family involvement, professional development, and school organization.

Specifically, they focused on trends related to teaching practices and learning environments and the relationship of these environments to student achievement, behaviors, and attitudes. By design the researchers compared and contrasted the progress of schools that were highly involved in the Middle Start Initiative (a total of twenty-one schools) to all other Michigan middle schools (134 schools). Their findings indicate that Middle Start schools improved in both reading and math achievement scores over the two-year period, as measured by the Michigan Educational Assessment of Progress (MEAP). "While seventh-grade reading and math MEAP scores for the nongrant schools matched the state average and were higher than the grant schools, grant schools displayed the most dramatic gains in reading and math (+10 and +6 percentage points, respectively)" (p. 3).

Students said that they had higher levels of stress to succeed academically but felt safer at the school in 1996/97 than they did in 1994/95. Additionally, Middle Start schools displayed several posi-

tive improvements in the areas of student adjustment, behavior, and substance use (a decrease in the reported use of alcohol). Students reported a more positive self-esteem and academic efficacy. Lastly, teachers reported working more effectively to serve the needs of early adolescents and having more contact with parents and guardians. Schools implementing the Middle Start Initiative are showing improved school capacity for continuous progress.

CPRD is also a partner in the expansion of this project with the Foundation for the Mid South Middle Start. Starting in 1998, middle schools in Louisiana, Arkansas, and Mississippi participated in this project. In the area of academic achievement, the Arkansas Middle Start schools (eighty schools) scored slightly higher on the 1998 reading and language achievement tests (SAT9) than the statewide group of middle-level schools. In Louisiana, Middle Start schools (sixty-eight schools) scored about the same on the Iowa Test of Basic Skills (ITBS) achievement tests as the statewide group of middle schools. In Mississippi (thirty-six schools), student achievement in language arts, reading, and mathematics was measured by the CTBS/5. Achievement scores for Middle Start schools were nearly identical to the state average for all schools. In short, these findings seem to suggest that Middle Start schools, despite their higher percentages of economically disadvantaged students, are keeping pace with the state averages (state averages include a higher percentage of more affluent schools).

John Backes, Allen Ralston, and Gail Ingwalson (1999) examined the impact of middle school practices on student achievement in North Dakota's Middle Grade School State Policy Initiative (MGSSPI) schools (called BRIDGES schools). The major question asked was, "What effect has the implementation of middle level practices by BRIDGES project schools had on student achievement in grades six through eight compared to non-BRIDGES schools in North Dakota?" The authors of this study admit that they "assumed that each of the recommended middle school practices had been implemented, [and] that students in BRIDGES project systemic-change schools should have measurable gains in student achievement because of the implementation of these practices." (p. 49).

The findings of the Backes et al. study indicated

that the composite grade equivalent score from grade six to eight was higher in BRIDGES project schools than in non-BRIDGES schools in the areas of reading vocabulary, language mechanics, study skills, science, and social studies. There was no difference in composite grade equivalent scores in reading comprehension and spelling. Non-BRIDGES students outperformed BRIDGES students in the areas of language expression, math computation, and math concepts and applications.

SUMMARY OF CURRENT RESEARCH

The inconclusive nature of the findings related to the effects of middle school practices on student achievement is evident. As Russell (1997) wrote, “Unfortunately, this model’s impact on the education of early adolescents has not been evaluated thoroughly. Consequently, the relationship of middle-level education to student achievement, in particular, remains unclear” (p. 169). While we can criticize much of the research that exists and call for further research, we should be encouraged that there is substantial literature that exists that supports implementing middle school restructuring. We should also not forget that the dilemma in which we find ourselves, in the process of developing a strong research foundation for the middle school movement, is not atypical of educational research in general.

There continue to be issues that make establishing a connection between the middle school concept and improved student performance problematic. Importantly, we cannot ignore findings that note that socioeconomic status was found to be the most significant correlate to student achievement (Hough and Sills-Briegel 1997), that many schools serving large numbers of economically disadvantaged students provide a much less supportive learning environment and therefore lower student achievement (Stephens and Jenkins 1994), or that previous student achievement is a powerful variable whenever predictions are made about subsequent achievement (Russell 1997).

The bottom line of this corpus of research is summarized in NMSA’s Research Summary #12: Academic Achievement (NMSA 2003). There it is noted that: (1) the issue is complex, (2) schools which implement more *Turning Points*’ recommendations show greater gains in student outcomes, (3) the aim is equitable high achievement for all types of students, (4)

the interrelationship of many factors affects student outcomes, and (5) there is a strong link between socioeconomic status and achievement (NMSA 2003).

Vincent A. Anfara Jr.

ISSUES IN MIDDLE SCHOOL CURRICULUM AND INSTRUCTION

Middle school curriculum and instruction share a dynamic interdependent relationship. Each component relates to the other: curriculum is a plan for student learning and instruction is the process of putting the plan into action. Though inextricably connected and intertwined, curriculum and instruction in middle schools are addressed independently in the following sections.

CURRICULUM

Curriculum, a plan to engage students, includes student learning goals, instructional experiences, and assessment techniques, and serves as the vehicle for learning skills and knowledge in schools. Curriculum can be a fixed or variable script for learning. Defined as “the courses of study in an educational institution,” curriculum delineates which skills or content are to be learned, how the skills or content will be learned, and what evidence will be collected to know that the skills or content was mastered. The middle school course or curriculum has its roots in secondary education.

Organizational shifts in secondary education were a step toward a middle grades configuration. In the 1890s, secondary schools expanded to encompass six grades (7–12) in order to discourage attrition and retain students in schools as well as provide a more challenging and content-specific curriculum. In the early 1900s, secondary schools were subdivided into two levels: junior high (7–9) and senior high (10–12) that shared similar ideology and curricular emphasis. The curriculum in the junior high, the predecessor of middle schools, was separated into distinct disciplines. In addition to structural changes, a movement toward a more child-centered curriculum began. G. Stanley Hall pioneered a flexible and

developmental curricular and instructional approach. John Dewey proposed curriculum that centered on students' interests, problem solving, and social experiences rather than separate subject areas. Also in the early 1900s, differences were noted in the educational needs of young adolescents and older adolescents. In junior highs, the notion of curriculum based on exploration and individual interest had emerged.

By the 1930s, two different approaches to secondary curriculum were evident: the traditional, subject-centered curriculum and an experimental curriculum that was problem-based and centered on learners' needs and interests. Researchers compared the effects of traditional separate-subject and experimental curricular approaches in the Eight Year Study (1932–40), a comprehensive long-range research study (Lipka et al. 1998). In experimental schools, the sharp divisions within broad disciplines such as science, mathematics, and social studies were blurred or eliminated. Other disciplines, such as English and social studies, were integrated. In 1942, the study's report indicated that graduates from secondary schools with experimental curricula were superior to those from schools with conventional separate-subject curricula. World War II eclipsed the Eight Year Study's findings that supported experiential curriculum, and subject-centered curriculum continued to dominate secondary education.

During the 1940s and 1950s, curriculum development theory influenced secondary education. Ralph Tyler articulated an innovative approach to curriculum design and evaluation in *Basic Principles of Curriculum and Instruction* (1949). He postulated four basic principles of curriculum development: (1) defining appropriate learning objectives, (2) establishing useful learning experiences, (3) organizing learning experiences to have a maximum effect, and (4) evaluating the curriculum and revising ineffective aspects. Tyler reasoned that the curriculum development process needed to start with the learning goals and objectives. His principles linked curriculum to instruction and shaped how secondary teachers planned and enacted the curriculum.

At the same, junior high curriculum struggled to serve two goals, providing a rigorous academic program and addressing the developmental needs of

young adolescents. Though junior highs retained more students, these institutions fell short of adequately addressing the developmental needs of young adolescents and remained departmentalized with a separate-subject focus. Criticisms of the junior high model gave rise to the middle school movement of the 1960s.

In 1963, William Alexander first used the expression "middle school" to describe the schools between elementary and high school (McEwin 1992). Alexander, regarded as the "father of the middle school," led the movement to create middle schools and a middle level curriculum that would meet the unique needs of young adolescents. The emergence of the middle school concept led to new educational trends during the 1960s and 1970s. Organizational changes such as interdisciplinary teaching teams and advisory programs supported a more learner-centered curriculum. Several curriculum models were suggested for the middle school. Donald Eichhorn's model focused on students' physical, cognitive, social, and cultural characteristics (Toepfer 1997). The Alexander model targeted personal development, skills for continued learning, and organized knowledge. John Lounsbury and Gordon Vars recommended unifying the curriculum using a problem-centered block-time model to examine young adolescents' personal and social concerns (1978). Conrad Toepfer advised that curricula be designed locally to better address young adolescents' characteristics and to serve specific community needs (1997). Developmental responsiveness to middle school students was at the center of these early curriculum models.

The National Middle School Association, founded in 1973, advanced middle level education and established a clear philosophical base for middle school curriculum. Dedicated to the development, education, and growth of young adolescents, this emergent professional organization underscored the importance of a middle level curriculum in publications and at professional development venues. In 1982, the National Middle School Association articulated its rationale and vision for middle schools in a position paper, *This We Believe*. Among the middle school essentials was a balanced curriculum based on the developmental needs of young adolescents.

Throughout the 1980s and 1990s, the middle

school concept and its curriculum gained national attention. The Carnegie Corporation of New York established the Carnegie Council of Adolescent Development, which in turn formed a Task Force on Education of Young Adolescents. The unique challenges of young adolescence were a part of the national agenda. The task force fueled organizational and curricular changes in middle schools with its landmark report, *Turning Points: Preparing American Youth for the 21st Century* (1989). Their eight recommendations included: Create small communities for learning; teach a core academic program; ensure success for all students; empower teachers and administrators to make decisions about the experiences of middle grade students; staff middle grade schools with teachers who are expert at teaching young adolescents; improve academic performance through fostering health and fitness; reengage families in the education of young adolescents; and connect schools with communities. The majority of middle schools responded by establishing interdisciplinary teaching teams to correlate subject areas and advisory programs, yet a core curriculum remained elusive. In response, middle level researchers and advocates redoubled their efforts to define middle level curriculum. James Beane conceptualized an integrated middle school curriculum with central themes drawn from the intersection of young adolescents' personal concerns and issues of society (1993). The focus on integrated curriculum was also apparent in *This We Believe: Developmentally Responsive Middle Level Schools*, a second position paper from the National Middle School Association (1995). This influential document called for middle schools to provide challenging, integrative, and exploratory curriculum.

Concurrently, the standards-based reform movement surfaced from public dissatisfaction with low student achievement of American students as compared to students from other industrialized countries. Influential private, political, and public sectors converged to work toward improving student achievement by setting high standards. Standards-based reform efforts swept the nation. State departments of education identified and adopted educational standards to raise student achievement. This accountability movement influenced curriculum development. Grant Wiggins and Jay McTighe

advocated the backward design process for developing curriculum (1998). Stages in the backward design process included: identifying desired results, determining acceptable evidence, and planning learning experiences and instruction. Wiggins and McTighe labeled their curriculum design process as "backward" because it was in contrast to the traditional process used by many educators, which began planning by selecting or creating educational activities. In the backward design process, adopted standards and acceptable evidence of learner understanding are identified prior to planning educative experiences. Starting with educational standards was not a new curriculum design approach. Fifty years earlier, Ralph Tyler articulated the reasonableness of using educational standards as the criteria for ascertaining the curricular content, preparing assessments, and selecting instructional practices and educative experiences (1949).

At the beginning of the twenty-first century, standards-based reform continues to influence American education, including middle school curriculum. Carnegie Corporation of New York sponsored a second report, *Turning Points 2000: Educating Adolescents in the 21st Century*, which kept the spotlight on curriculum for young adolescents (Jackson and Davis 2000). The report recommends a middle level curriculum that is grounded in academic standards, relevant to adolescents' concerns, and attentive to how students learn best. The intent of a standards-based curriculum is to ensure excellence and equity for all students. Using a backward design model, educators develop curriculum and assessment based on the agreed upon content standards before planning instruction. As a consequence, curriculum defines precisely what students should know and be able to do.

Discipline-Based and Integrated Curriculum

Core curriculum can be structured around subject area disciplines or integrated across the disciplines. In a discipline-based or disciplinary approach, curriculum is organized in separate subjects. Subjects such as language arts, mathematics, science, and social studies are departmentalized. Teachers from the same subject area work independently or collectively to develop curriculum based on subject-specific concepts and skills. Organizationally, departments and

department meetings support discipline-based curriculum. An important goal of the approach is to provide students with extensive and in-depth subject knowledge. This separate subject approach remains the traditional configuration in middle schools. Despite criticisms of fragmentation, the discipline-based structure to core curriculum dominates middle schools.

In contrast to the disciplined-based approach to core curriculum is the integrated approach. An integrated curriculum is organized around overarching ideas or broad concepts that cut across the subject area disciplines. Teachers from different subject areas collaborate systematically to connect discipline perspectives and learning processes. Integrated curriculum also accentuates the developmental needs and concerns of young adolescents. Organizational arrangements such as interdisciplinary teaching teams and common planning time support the integrated curriculum development. Integrated curriculum differs from the frequently disparaged topic-based curriculum, which is centered on appealing and sometimes superfluous themes.

Disciplinary and integrated approaches are charged with providing academically rigorous curriculum. Academic standards and accountability pressures have an effect on both approaches. These pressures have implications for another dimension of middle schools: the exploratory curriculum.

Exploratory Curriculum

Exploration is a hallmark of middle school curriculum. The principle of exploration is highlighted by the National Middle School Association's call for relevant, integrated, and exploratory curriculum. Since exploration can provide academic challenge and be developmentally responsive, it is widely accepted in middle schools. When infused across the entire middle school curriculum, exploratory programs serve several functions. First, young adolescents discover their abilities and interests, which supports their transition to adulthood. Next, exploratory activities disclose ways for students to make contributions to society. Finally, exploration introduces students to healthy and enriching activities. Exploration in the middle school curriculum may improve young adolescents' self-image, enhance self-esteem, and build confidence. While the no-

tion of exploration applies to the entire middle school curriculum, in reality, it usually takes place in exploratory courses.

Ideally, exploratory courses engage young adolescents actively and afford them with opportunities to learn new skills and try novel ways of thinking. Through elective classes, exploratory wheels, mini courses, and after-school programs, exploration provides students with authentic and hands-on experiences. Though vestiges of junior high's vocational emphasis such as industrial arts and home economics remain, more contemporary offerings are prevalent in middle schools. Foreign language, drama, music, art, health, life skills, and technology adjoin and extend the core middle school curriculum. Exploratory curriculum is critical to the development of young adolescents, yet accountability pressures compel middle schools to reduce exploratory courses. In light of the standards-based movement, Edward Brazee suggests that middle schools articulate how exploratory courses are integral to the middle school curriculum, promote the complementary nature of exploratory and core curriculum, and align exploratory curriculum and core curriculum concepts (2000). Exploration adds meaning and relevance to the middle school curriculum.

INSTRUCTION

Instruction, the process of putting the curriculum into action, functions as part of the system for acquiring skills and information in schools. Linking curriculum and instruction is a complex and variable process. Identified as "the act, practice, or profession of instructing" (American Heritage Dictionary 2000), instruction is the purposeful direction or guidance of the learning process. Professional educators, theorists, and researchers often refer to the act or profession of teaching as pedagogy. In schools, the act of instructing or teaching occurs typically in classrooms.

At the onset of the twentieth century, the emphasis in education was content, not instruction. Secondary education focused on the presentation of knowledge and acquisition of knowledge, rather than instruction or instructional practice. Teachers were presenters of knowledge and students were vessels to be filled. In the early 1900s, new perspectives on instruction emerged. John Dewey emphasized inquiry

and the exchange of ideas in the learning process. The Progressive Education Association, influenced by Dewey, articulated a set of instructional principles. Among these tenets were the notions that teachers need to consider students' developmental needs, plan experiences for students to construct their own knowledge, and use inquiry as a primary learning tool. While proponents of these principles advocated instructional processes such as projects and group work, the presentation of knowledge dominated secondary schools (Marzano 2000).

The potential of instruction surfaced at the conclusion of an extensive research project, the Eight Year Study. Findings revealed the superiority of graduates from secondary schools with experimental curriculum and instructional practices over graduates from traditional secondary schools. An expansive report of the Eight Year Study documented exemplars of instruction. In experimental schools, instructional practices included students making use of reflective thinking and developing problem-solving techniques, which served as the basis for scientific inquiry. Overshadowed by the nation's attention on World War II, the findings had little direct influence on instructional practices in secondary schools. However, Ralph Tyler, who had directed the evaluation of the Eight Year Study, had a profound effect on both curriculum and instruction. Tyler's seminal publication, *Basic Principles of Curriculum and Instruction*, raised awareness about the relationship between curriculum and instruction (1949). He asserted that different types of content could require different types of instruction. Tyler's work sparked significant interest in instruction.

Attention on instruction diminished somewhat in 1957 with the launch of Sputnik, while curriculum and content knowledge grew in importance. Secondary schools stressed subject matter knowledge and content coverage. In the early 1960s, Jerome Bruner helped to stem waning interest in instruction. His publication, *The Process of Education*, advanced the notion that teachers' instruction could affect what and how students learn (1960). Also in the 1960s, Hilda Taba promoted instructional methods of inquiry and re-emphasized using different instructional practices for different types of content knowledge (Taba 1962). Though best known for her curriculum development model, Taba accelerated understanding of instruction. Throughout the 1970s, Bruner and

Taba's foundational work directed attention toward instruction and research on teaching.

The middle school's learner-centered curriculum and instruction models started to take root during the 1970s. Deep-seated instructional traditions were beginning to give way to more developmentally appropriate practices in middle schools embracing the middle school concept. Instructional practices such as problem solving and independent skills for learning emerged. Additionally, the very nature of instruction had changed dramatically. Middle school teaching responsibilities expanded to encompass human interaction, personal development, and participation in advisory programs. Adult interactions also escalated when teachers were positioned on interdisciplinary teaching teams as colleagues in the teaching and learning process. Collegial interactions of this magnitude were uncharted territory for most teachers. Teacher responsiveness to peers and young adolescents was evident in these emergent middle schools.

Prolific research on classroom teaching in the 1970s resulted in a body of literature on teacher effectiveness. Noted in literature on teacher effectiveness were instructional practices such as using advanced organizers, questioning techniques, grouping students, introducing and reviewing concepts, engaging student participation, and assigning seatwork and homework. During the 1970s and 1980s, learning strategies emerged as instructional tools. Defined as a plan or set of steps to accomplish a task or learn content, learning strategies were developed for different subject areas to help students become more effective learners. For perhaps the first time, teachers were teaching students how to learn.

The emphasis on instruction continued in the 1980s and 1990s. The National Middle School Association called for varied instructional strategies in *This We Believe* (1982). The organization's first position paper clarified the need for different types of instruction to effectively serve the wide-ranging developmental levels of students in middle schools. The Carnegie Corporation of New York's far-reaching report, *Turning Points: Preparing American Youth for the 21st Century* (1989), recommended that middle schools ensure student success through cooperative learning and other instructional approaches suitable for young adolescents.

Additionally, the report called for teachers and administrators to make decisions about the learning experiences of middle level students. The emphasis on instruction was also evidenced in the National Middle School Association's second position paper, *This We Believe: Developmentally Responsive Middle Level Schools* (1995), which challenged schools to provide varied teaching and learning approaches. Teaching practices needed to accommodate the diverse skill, ability, and knowledge levels of young adolescents.

At the beginning of the twenty-first century, the emphasis on instruction persists. Standards-based reform efforts compel teachers to use instructional approaches that prepare all students to achieve high standards. As articulated in *Turning Points 2000: Educating Adolescents in the 21st Century* (Jackson and Davis 2000), middle schools must focus on instructional practice. Middle school teachers are challenged to organize instruction around essential concepts and skills, adapt instruction to accommodate young adolescents' varying ability levels, and use instructional approaches that are culturally responsive. To improve instruction, teachers implement various models of instruction.

Two models of instruction that build on research and theory of instruction are cooperative learning and direct instruction. Both models have the potential to enhance the teaching and learning process.

Cooperative learning is an instructional model with a deep research base. Roger Johnson and David Johnson describe cooperative learning as students working together to accomplish shared learning goals (1999). Johnson and Johnson's cooperative learning model is widely used at every school level and consists of five basic elements: positive interdependence, face-to-face promotive interaction, individual accountability, social skills, and group processing. This instructional model incorporates social dimensions of learning and capitalizes on student interactions that are especially critical for young adolescents.

A second model of instruction, direct instruction, also has a strong research base. Direct instruction draws from theory about effective instruction and requires the use of well-scripted lessons. In the direction instruction model, teachers deliberately focus students' attention on the critical information or skills to be learned using a series of steps. Direction

instruction includes teacher presentation of content, rehearsal of content, guided practice, and ongoing checks for student understanding. Essential features of the model are highly organized lessons and explicit teaching routines.

VARIED INSTRUCTIONAL APPROACHES

Though teacher-directed instruction remains the most prevalent instructional practice in middle schools, learner-centered approaches to instruction are also evident. The cooperative learning model is used regularly in middle schools. In small groups, students collaborate to attain a shared learning goal. Another learner-centered model, inquiry, has a strong following. Inquiry models include problem-based learning and project-based learning. The problems or projects tend to be authentically integrative and draw on knowledge and skills from more than one discipline. Another authentic instructional approach is the classroom workshop. Types of classroom workshops include the reading-writing workshop popularized by language arts programs, history workshop, and science workshop. In each workshop approach, the classroom becomes the site of authentic student work.

A groundbreaking and comprehensive teaching approach is differentiated instruction. Advanced by Carol Ann Tomlinson, differentiation of instruction is designed to respond to the different needs of students (1999). Differentiation requires teachers to focus on the essential concepts and skills to be learned, and then modify the curriculum and instruction to attend to differences in students' prior knowledge. The approach unites instruction and assessment processes. In differentiated instruction, learning is viewed as collaboration between the teacher and student, which aligns with the developmental needs of young adolescents.

GROUPING FOR INSTRUCTION

Students are organized or grouped for instruction in one of two ways, in homogenous groups or heterogeneous groups. Homogeneous grouping, also known as ability grouping or tracking, organizes students by ability level. Students of similar ability are positioned or tracked into the same class or classes. In

middle school, tracking young adolescents restricts their cognitive and social interactions. Tracking often segregates students along class and racial lines. Despite negative consequences, tracking is pervasive in middle schools. An alternative to tracking, heterogeneous grouping, organizes students of different abilities in the same class or classes. Heterogeneous grouping works to promote equity and foster high achievement for all students. Both grouping practices significantly impact young adolescents' school experiences. In middle schools, the controversy over how to best group students for instruction continues.

CURRICULUM AND INSTRUCTION AS A DYNAMIC SYSTEM

Middle level curriculum and instruction interact as a dynamic system. Changes in any part of this system necessitate change in the other parts. Influences on curriculum and instruction come from national, state, and local arenas. Ultimately, middle school curriculum and instructional practices should cater to young adolescents' developmental characteristics and needs, respond to contextual conditions, and address societal demands.

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ADOLESCENT EDUCATION

For at least fifty years the vast majority of Americans have attended high school, and a solid majority have graduated from high school. But this near-universal enrollment of adolescents in high school is a historically recent phenomenon. In 1900 barely 10 percent of fourteen to seventeen year olds were enrolled in school. During the next five decades school enrollment in this age group exploded from the atypical to the norm: to 31 percent in the 1920, 50 percent in 1930, 73 percent in 1940, 76 percent in 1950, and 87 percent in 1960.

Prior to 1950, the word “dropout” did not exist in the American vocabulary, because it was assumed that many young people who had no interest in or need for the “higher education” of high school would quit school and go to work or get married and raise children. But in the 1950s what had once been viewed as normal and inevitable—quitting school and going to work—was reframed by some critics as dropping out, thus a failure both of the high school and of the dropout. According to the United States Department of Education’s National Center on Educational Statistics (NCES), 27.2 percent of teenagers quit school before graduation in 1960. Yet by 1970, this rate had fallen dramatically to 15 percent, the largest reduction in any decade on record. From there it diminished slowly to 14.1 percent in 1980, 12.1 percent in 1990, and 10.7 percent in 2001, as noted in NCES data (2001).

However, various gender and ethnic/racial/cultural groups did not drop out of school at the same rate. According to the NCES, males dropped out in 2001 at the rate of 12.2 percent; females at 9.3 percent. Whites dropped out at the rate of 7.6 percent; African Americans at 13.4 percent; Latinos at 25.3 percent.

In recent years, several researchers have challenged the National Center on Educational Statistics’ calculations of the dropout rate. Jay Greene’s

study (2002) that traced the same cohort of students from eighth grade in 1993 to 1998 found a high school graduation rate of only 71 percent, with a 56 percent graduation rate for African American students and a 54 percent graduation rate for Latino students. A study conducted for the Business Roundtable (Sum et al. 2003) using a similar methodology found almost the same graduation rate of 71.3 percent. A study published in 2004 by Walter Haney, George Madaus, and Lisa Abrams, relying on data from 1987/88 through 2000/01, found a graduation rate of 74.4 percent.

Haney et al. found enormous variations in graduation rates among the states. New Jersey (86 percent), North Dakota (84 percent), Iowa and Utah (83 percent), and Minnesota (82 percent) had the highest graduation rates in 2000/01. South Carolina (51 percent), Florida (52 percent), Georgia, Mississippi, and Tennessee (57 percent), New York (58 percent), and North Carolina and Arizona (59 percent) had the lowest graduation rates. Haney et al. also found that high school graduation rates declined in forty-three states during the 1990s, stayed the same in two states, and rose marginally in five states, with the largest gain of 6 percent in New Jersey. Most of the states had small declines in the graduation rate, but several states had large declines, including Hawaii (21 percent), South Carolina (14 percent), Tennessee (12 percent), and Florida and Mississippi (11 percent) (Haney et al. 2004).

Nettie Legters and Robert Balfanz in their 2001 study “How Many Central City High Schools Have a Severe Dropout Problem, Where Are They Located, and Who Attends Them?” found that about half of the high schools that they studied in central cities graduated fewer than 50 percent of their ninth grade enrollees, suggesting that a significant part of the high school dropout population lived in the thirty-five largest American cities and had attended between two

hundred and three hundred specific schools. In 2004 a study from the Harvard Civil Rights Project and the Urban Institute, "Losing Our Future: How Minority Youth Are Being Left Behind by the Graduation Rate Crisis," found that in 2001, only 75 percent of white students, 50 percent of African American students, 51 percent of Native American students, and 53 percent of Latino students received a high school diploma (Orfield et al. 2004).

What explains the significant variation between the NCES data and those of other researchers? Greene (2002) and Christopher Swanson (Orfield et al. 2004), co-author of "Losing Our Future," agree that the NCES formula generates data that profoundly underestimates the number of students who quit school without earning a high school diploma. Greene also notes that the NCES counts a GED certificate as a high school graduation, when the economic value of a GED and its likelihood of leading to further education are far more limited than an actual high school graduation.

It seems clear that there is a high school dropout crisis in our nation, particularly for young people of color who live in large cities. But what of students who graduate from high school? According to the Association of American Colleges and Universities (2000), 75 percent of high school graduates attend a two- or four-year college within two years of graduating from high school, and 90 percent of graduates say they hope to attend college at some point. Minorities comprise 28 percent of college students. Between 1960 and 2001, college enrollments grew from 4.1 million to 14.8 million, more than tripling in size, while the overall national population increased by 57 percent.

In the past twenty years many more high school students have taken and passed advanced placement (AP) courses, which they have often translated into college credit. Between 1984 and 1996, the number of students who took AP courses more than doubled, from 50 per 1,000 twelfth graders to 131 per 1,000 twelfth graders. In 2003 the number of students taking AP courses continued to grow, with an increase of 8.5 percent in the number of students taking AP exams. More African Americans took AP exams in 2003, with an increase of 12.9 percent; more Latinos, with an increase of 15.8 percent; more Native Americans, with an increase of 16.1 percent; and more students from low-income families, with an increase of 26.4 percent (The College Board, 1999, 2003).

High schools are failing, particularly in large cities. Yet high school students are taking more AP courses and exams than ever before and going to and graduating from college in record numbers. High school students are also applying to competitive colleges and universities in record numbers.

Most teens in the United States attend comprehensive high schools that fit within a conventional paradigm that was modeled on the new industrial organization of the early twentieth century and that became the norm in the second and third decades of that century. These high schools have more than 800 students. Students take five or six classes at once. Students are tracked by perceived ability into three or four tracks (honors, college preparatory, general, remedial). Teachers teach five classes and have a load of 150 or more students. Teachers have their own classroom, and students move from one room to another for each class. Teachers teach discrete subjects, such as mathematics or history or biology. To a significant extent, teachers apply a behavioristic or transmission model of learning: knowledge exists in the world outside of the student, and the student must memorize this knowledge. Students have only a few minutes to pass from one class to the next. Lunch period is twenty-five or thirty minutes long. Students organize themselves not as one school community but into cliques. The high school is governed largely through hierarchical and non democratic procedures.

Given the enormous contrast between the rapid pace of change throughout most sectors of American society and the entrenched stability of the comprehensive high school, the question raised is inevitable: must the American high school change? And if so, how?

David Marshak

HIGH SCHOOL STRUCTURE AND CURRICULUM, 1893-1945

In 1893 the Committee of Ten—five university presidents, the U.S. Commissioner of Education, a professor, two private school headmasters, and one public high school principal—led by Charles Eliot, the presi-

dent of Harvard University, issued its report on the desired high school curriculum (Eliot 1893). The committee proposed four courses of study: Classical, Latin/Scientific, Modern Languages, and English. What identified each course was its degree of focus on Greek, Latin, and modern languages. More important though than the variations among the courses were the similarities. Each course of study included five curricular “main lines”—English, mathematics, science, history, and foreign language—and was organized into separate subject classes, each lasting somewhat less than one hour. These were the first elements in what was to become the conventional paradigm of high school.

The committee also advocated that every subject to be taught in high school should be taught in the same way for all students. Students could have some choice in subjects but only a limited, carefully guided choice. Each subject should be given the same weight and value. The Committee of Ten’s report had enormous influence both in its time and throughout the following century, and it commenced an ongoing dialogue and conflict about what the curriculum should be in the American high school.

In 1918 the Committee on the Reorganization of Secondary Education, consisting of professors of education, educational administrators, and high school leaders and teachers, issued its *Cardinal Principles of Secondary Education* (Kingsley et al. 1918). The *Cardinal Principles* argued for a high school curriculum that included health, command of fundamental processes, worthy home-membership, vocation, citizenship, worthy use of leisure, and ethical character. The principles advocated for a greater variety of subjects to be offered and for greater flexibility in students’ election of their own courses of study. So a high school should offer a differentiated curriculum, and students could select their courses, often in relation to their vocational aspirations.

Of course, in 1892 only an elite of fourteen to seventeen year olds was in school, less than 10 percent of the cohort of young people in that age range. By 1918 more than 30 percent of young people attended high school, including many immigrants in the large eastern and Great Lakes cities, so the issues of teaching and learning had changed dramatically. Ellwood Cubberly, a professor of education at Stanford and a nationally recognized leader in education circles, articulated a widely held view when he explained that urban schools should abandon the

notion that all are equal and prepare young people for their inevitable status and roles in adult life, which could be determined largely by the social position of their families (Tyack 1974).

David Tyack (1974), in his book *The One Best System*, called Cubberly and his allies “administrative progressives.” They were elitists who wanted to differentiate the curriculum through what sounded like elective choice but quickly became what is now known as tracking. They were focused on social efficiency and social control. Administrative progressives viewed the new industrial processes of the early twentieth century, particularly the “scientific management” of Frederick W. Taylor and the mass production techniques of Henry Ford, as the modern paradigm for schools. They built public high schools that intentionally looked like factories, and they structured them to include seven- or eight-period days with periods of less than an hour, a different teacher for each subject, brief passing times between periods, a short lunchtime, tracking by perceived ability, and an overall vision of school as an authoritarian environment and learning as the memorization of data by students. In this effort the administrative progressives adopted a few elements from the Committee of Ten, particularly discrete subjects, and they added other elements of their own devising to construct what became the twentieth-century conventional high school paradigm.

The view of Cubberly and his allies provided one kind of enactment for the school program offered in the *Cardinal Principles*. A very different kind of enactment could be found in the values of educators who based their approach to schooling to a large extent on the work of John Dewey, who argued that school ought to be meaningful to young people in terms of their own frame of reference and that life in school should be connected to the lives of adults outside of school (Tyack 1974). Tyack called these educators “pedagogical progressives” to distinguish them from their opponents, the administrative progressives, and identified democracy, relevance, cooperation, and meeting the needs of individual students as their key values. The pedagogical progressives placed less emphasis on subjects and more emphasis on student activities and projects, student interest and engagement and choice, and democratic practice in schools.

Cubberly’s values and practices were profoundly

antithetical to those articulated by Dewey (although at least three historians, Diane Ravitch [2000] in *Left Behind: A Century of Failed Schools Reforms*, and David Angus and Jeffrey Mirel [1999] in *The Failed Promise of the American High School 1890–1995*, have for some reason recently ignored the hostility of the administrative progressives and the pedagogical progressives toward each other and lumped them together into a common camp of “progressives”). Yet ironically they both supported a high school curriculum more like that of the *Cardinal Principles* than the one proposed by the Committee of Ten. During the first three decades of the twentieth century, pedagogical progressives had much more impact in elementary schools than they did in secondary schools, although some did teach and lead in high schools as well. In the 1920s the industrial paradigm of high school propounded by the administrative progressives became the norm for public high schools in the United States, particularly in city schools. However, many small town and rural high schools escaped some elements of the paradigm at this time, particularly tracking, because they had too few students to track.

During the same years, the Committee of Ten’s approach—the same core academic curriculum for all students—was discarded by most public high schools as high school enrollment swelled dramatically, although the Committee’s ideas for discrete subjects and fifty-minute classes were maintained. With increased numbers of students came increased social class and ethnic diversity, and the fundamental response to this diversity in what was soon known as the comprehensive high school was differentiation of the curriculum into the college preparatory track (sometimes with two levels: honors and college prep), the general track, and the vocational and commercial tracks (the former mostly for boys, the latter mostly for girls). By the end of these years the core academic curriculum had mostly retreated into the private preparatory high schools of the upper class.

The institution of tracking ensured that many students from different backgrounds would have dramatically different high school experiences. At the same time that high schools reinforced the social status of some students, they provided access to social mobility for others. In the 1920s and even more so from 1945–75, high schools were an engine of upward economic and social movement for many young Americans. Since 1975 high school tracking seems

to have offered less mobility, particularly since the income of high school graduates has actually decreased in real dollars since 1980.

In the 1920s the junior high school began to proliferate throughout the nation. While the first junior high school was created in 1909 in Berkeley, California, it was only after World War I that the idea caught on, thus restructuring the high school into the senior high school, with grades ten to twelve. The stated purpose of the junior high was to provide a transition from the childhood-oriented arrangements of the elementary school to the more adultlike structure of the high school. Given this intent, it took only four decades for many educators to come to believe that the junior high had failed because it became for the most part a replication of the high school rather than a transition to it. In the 1960s the middle school movement rose up in response to this analysis.

During the first three decades of the twentieth century, John Dewey and the pedagogical progressives had a significant impact on elementary education, with thousands of schools at one point or another enacting progressive principles. But high schools had remained first under the sway of the Committee of Ten’s core curriculum and then, after the report of *Cardinal Principles*, had been shaped by the administrative progressives into industrially modeled, comprehensive high schools with differentiated, tracked curriculum. During the 1920s, high school enrollment soared from 31 percent to 50 percent, then from 50 percent to 73 percent in the 1930s.

In 1930 the Progressive Education Association (PEA), a national organization of pedagogical progressives, launched what became known as the Eight Year Study (Aiken 1942). These educators took note of the phenomenal growth in high school enrollment during the previous two decades. While they had helped to create and applauded the movement in high schools away from a core curriculum to a broader, more differentiated curriculum with some choices for students, they also saw the overarching high school paradigm as authoritarian, conventionally subject-based and tracked, and hostile both to the concerns and needs of young people and to democratic values. In addition, they perceived high schools that wanted to experiment to be constrained by the demands of colleges for conventional high school course completion if students wanted to be admitted.

The PEA enlisted Wilford Aiken to lead the study

that included thirty high schools across the nation, large and small, public and private, that had agreed to revise their educational programs in the following directions: to become more democratic both in the enactment of teaching and learning and in school governance, more inclusive of the present interests and concerns of young people as well as of the cultural heritage of America and of western civilization, more personalized for individual students, more engaging both of young people's search for meaning in life and for vocation, more integrative in terms of traditional subjects, greater focus on problem solving and habits of reflective thinking, and more open to experimentation and revision. There was no single plan or design for such revision; rather each school built on its own current design in ways of its own choosing. The study also found 300 colleges and universities that agreed to admit the students enrolled in these thirty schools if they met the graduation requirements of their own school, even if students did not meet more conventional course completion requirements.

The Eight Year Study found that students from the experimental schools did as well in college on traditional tests as did students from conventional high schools, but they performed better on tasks that required problem-solving skills and creativity. Indeed, the more the high school had moved away from the conventional paradigm of secondary school, the more powerful were the students' abilities to solve problems and act creatively. The study also found that integrative approaches to curriculum in high school produced highly favorable outcomes in college in terms of students' capacities for understanding. Finally, the students who had attended the experimental high schools completed their college education at the same rate as those who had gone to conventional schools.

Unfortunately for Aiken and his pedagogically progressive colleagues, the Eight Year Study was published in 1942 at a time when World War II consumed the attention of most Americans. So the findings of the study never entered any sort of national conversation about high school. Indeed, after World War II, the pedagogical progressives lost their energy and focus as a movement during the first years of the Cold War with the Soviet Union and, for more than a decade, they largely disappeared from the debate.

David Marshak

HIGH SCHOOL STRUCTURE AND CURRICULUM, 1945-83

After World War II the conventional, industrial high school paradigm defined the vast majority of American high schools for the next sixty years, despite a series of attacks both from those who wanted to implement a Committee of Ten style of core curriculum and those who wanted to reduce or dismantle the authoritarian structure and the tracked curriculum and classes of the high school. The only major innovation in the social structure of high schools came in the 1960s when many states acted to compel or induce small town and rural schools to band together and create "union" or "unified" high schools that were much larger in student enrollment. Life in high schools was also affected considerably by racial integration, although the enactment of racial integration had almost no effect on the conventional paradigm of high school. Harsh criticism, conflict, and controversy engulfed the high school in every decade from the 1950s on, yet the fundamental paradigm of the high school was largely immune both to significant reform and to transformation.

In 1945 Charles Prosser argued that 60 percent of high school students did not need either an academic, college preparatory curriculum or an explicitly vocational curriculum (Boyer 1983). He and others used the term "life adjustment education" to include a curriculum focused on citizenship, home and family life, use of leisure, health, tools for learning, and occupational adjustment. Prosser expected only 20 percent of high school students to go to college, with another 20 percent training for vocations. In a pamphlet he wrote for the U.S. Office of Education, Francis Rummel (1950) explained the life adjustment approach to high school: "Most boys and girls are headed for jobs that require little training. These youth need and want an invigorated general education that relates to their everyday lives."

The life adjustment model was strongly reminiscent of some elements in the *Cardinal Principles of Secondary Education* from the 1918 report of the Committee on the Reorganization of Secondary Education. Life adjustment was promoted by the U.S. Office of Education and by some prominent educators, but it is not evident that the life adjustment

movement changed the realities of the high school curriculum and structure very much. Cubberly's vision of differentiation of curriculum within an authoritarian environment had already triumphed. In this view, nearly universal enrollment in high school demanded tracking of students based on their perceived intelligence and/or ability. So high schools had a college prep track (obviously Prosser was dramatically wrong with his estimate of college attendance), a general track for students with undefined interests who seemed to lack college potential, and vocational and commercial tracks, that is, trade skills for boys and secretarial preparation for girls.

The life adjustment campaign and rhetoric did induce its inevitable opposition, for the history of the twentieth century is the story of continual intellectual and political conflict among three incompatible views of the desired mission and function of American high schools: the Cubberly view, the Dewey view, and the Committee of Ten view. The most prominent critics of life adjustment were Arthur Bestor Jr. and Admiral Hyman Rickover, although many other voices of critique joined the national dialogue. As early as 1946 the *Detroit Free Press* ran a series of articles asking, "Are our schools failing in their job of preparing youth to earn a living in business and industry?" Bestor argued that education should focus on intellectual training, that school should teach young people to think, and that schools should concentrate on the traditional academic and scientific subjects. Bestor also believed that all students should study the same core curriculum. The controversy about the purpose and function of high school raged on through the 1950s with new intensity, fueled by the larger national feelings of fear and insecurity induced by the Cold War. But for the most part the controversy did not change practices in the schools themselves.

In October 1957 the Soviet Union launched the first artificial satellite, Sputnik, and a shocked and fearful American public looked for someone to blame. While a reasonable response might have been to lay the responsibility for the failures of the American rocket program to that date on the rocket scientists and military leaders who were actually running the program, waves of criticism were directed instead at the public schools, and particularly the high schools. It is an old American tradition in times of social upheaval and anxiety to blame

the schools first, as evidenced not only by the Sputnik panic but also by criticism of the intelligence of American soldiers prior to World War II and the anxiety about the decline in American economic dominance in the early 1980s that set the stage for *A Nation at Risk*, yet another report in a very long line of reports that described the failure of American schools (Gardner et al. 1983).

In the post-Sputnik frenzy Bestor and Rickover argued again that high schools needed to be re-focused on academics, and particularly on a core academic curriculum (Bestor 1985, Rickover 1963). Rickover lauded the European model of separate secondary schools for different classes of students. He argued that the comprehensive high school by design was at the root of the problem, because in its effort to serve all students, it failed to give adequate attention and resources to the needs and capabilities of the most able and gifted.

In 1959 James Bryant Conant—a renowned scientist, former president of Harvard University, and the former high commissioner and ambassador to West Germany—issued a report, *The American High School Today*, that took center stage in the nation's discourse about high schools. Contrary to Rickover, Conant reaffirmed the value of comprehensive high schools as emblematic of American devotion to the equality of our citizens. Conant argued that because the United States was different from the western European nations in our history and our commitment to equality of opportunity for all citizens, it was contrary to our values to send young people to separate schools. Conant maintained that comprehensive high schools could fulfill three key functions simultaneously: nurture a sense among young people that they belonged to the same American community, thus creating a common national identity and loyalty and ensuring positive social relations between diverse groups; offer a program of classes to those who were not college bound that would prepare them for adult work and social life; and provide challenging academic classes, particularly in math, science, and foreign languages, for those with intellectual gifts and talents (Conant 1959a).

What became known as the "Conant report" took center stage in the public debate and took attention away from Rickover and his allies. Conant had twenty-one detailed recommendations and one "top priority" in his report. The most significant recom-

mendations called for the elimination of tracking entirely and its replacement with subject-by-subject ability grouping, a strong focus on English composition for all students, an extension of the role of high school counselors so they could guide individual students toward appropriate classes, and special support and/or classes for the most academically gifted students.

Conant's recommendations did have some impact on high school programs but certainly not any kind of significant effect. The industrial paradigm of high school endured. Even when schools adopted ability grouping, it was usually shaped by mathematics placement. Due to scheduling limitations, math placement usually led once again to tracking. Tracking meant that many students in different tracks encountered each other only in gym, at lunch, and in meaningless homerooms, and they were more likely to experience alienation from or conflict with students from different tracks than to join together to forge a common bond. Conant's idealistic claims ignored the fact that the tracking system in most comprehensive high schools had outcomes that were not so different from those achieved by separate schools in European nations.

Conant's top priority was the elimination of small high schools. Conant argued, "I should like to record at this point my conviction that in many states the number one problem is the elimination of the small high school by district reorganization." Larger high schools were needed, according to Conant, so schools could offer a diversified and comprehensive curriculum at an affordable price. For example, small high schools, with graduating classes of less than a hundred students, usually could not afford to offer four years (or three years in senior highs, with the first year in ninth grade) of mathematics, science, and world languages. Only about 25 percent of students could profit from a fourth year in these subjects, according to Conant, and only larger schools would have enough students to afford them. In addition only larger schools could afford the teachers and equipment for nonacademic elective programs, such as vocational courses. "A small high school cannot by its very nature offer a comprehensive curriculum," Conant concluded. While Conant cited one hundred seniors as the bare minimum required, he offered California, where high school graduating classes already averaged 291 students by 1956, as the model of what should be (Conant 1959a). Ironically what Conant cited as the absolute

minimum in size from his perspective, one hundred students in each grade, was cited forty-two years later by the Gates Foundation as the largest acceptable size for a small, personalized high school.

The movement toward high school consolidation had begun prior to the publication of Conant's report in states such as California and New York, where state education officials had used an array of sticks and some carrots to entice local leaders or eventually compel them to create unified high schools districts. Indeed Conant himself had contributed "untiring missionary work" to this campaign for more than a year prior to the release of his report. Conant's effort, fueled by his personal prestige and his access to political leaders and the media, transformed high school consolidation into a nationwide movement, particularly in the wake of the Sputnik crisis. Conant focused much of his attention on science and mathematics, and these two subjects lay at the heart of the anxiety about American education and its putative failures in 1959.

In 1958 there were about four thousand American high schools with graduating classes of more than one hundred students and 17,000 with graduating classes of less than one hundred. By 1990 there were about eight thousand high schools with graduating classes of less than one hundred students and 12,000 high schools with graduating classes of more than one hundred students. Moreover 89 percent of the students were enrolled in the larger high schools by Conant's definition, with more than one hundred students in the graduating class. Indeed 72 percent of students were in high schools with more than eight hundred students. Most of this transformation took place prior to 1975. For example, in the late 1960s even rural states such as Vermont and North Dakota, despite widespread and intense local resistance, managed to convert the vast majority of high schools into the Conant mold.

What actually resulted from the high school consolidation movement of the 1950s and 1960s was the intensification of quite a different social phenomenon than the one Conant had in mind. This phenomenon was a youth culture, defined in large part by its profound alienation from adult society. Large, increasingly impersonal high schools did not create this youth culture, but they powerfully supported its growth.

In 1900 barely 10 percent of the fourteen to seventeen year-olds were enrolled in school. Most of

the rest were working on farms, in factories, and in family businesses. Many worked long hours in what today would be characterized as abusive conditions. Nonetheless there was no youth culture, because youth were profoundly integrated into adult society. In the next five decades school enrollment in this age group exploded from the atypical to the norm: to 31 percent in 1920, 50 percent in 1930, 73 percent in 1940, 76 percent in 1950, and 87 percent in 1960.

The youth culture actually started in the 1920s, when a relatively small number of affluent white youths began to appropriate African American music, jazz, and slang and to use drugs, both alcohol and marijuana. The key technological innovations that fostered this culture were the automobile and the radio. For the first time teens could easily get away from their folks. This culture grew minimally through the 1930s and 1940s, with its focus on music (Benny Goodman and Frank Sinatra both started their careers as objects of youth veneration whose music was castigated by adults of their day), dances, slang, and clothing styles. However, its growth was severely limited by the crises of the Depression and World War II, both of which acted to engage young people in adult society.

Mass youth culture was born in the 1950s and exploded in the following decade. Four major changes in society joined together to propagate this phenomenon. One was urbanization and the increased social mobility that it represented. In 1900 only 39 percent of Americans lived in urban areas; 61 percent lived in rural areas. By 1930 the migration to the city was on, and 56 percent of the population lived in urban areas. By 1950, it was 64 percent; by 1970, it was 74 percent. Urbanization meant that many teens no longer grew up in communities where they had a set of consistent relationships with adults other than their parents through their involvement over time in communal institutions.

A second element of change resulted from the post-war prosperity and the widespread sense of “normalcy” after nearly twenty years of crisis, despite the tension of the Cold War and the terror of atomic weapons. In the 1950s the “American century” blossomed into unprecedented material prosperity, and young people in large numbers began to have spending money, which they could use to finance the various aspects of the emerging youth culture. This

money came from the growing wealth of the enlarging middle class, which came to young people both directly in the form of allowances and through affluent parents’ capacity to let their children keep their earnings from after-school jobs, rather than requiring them to add these funds to the family pot as had previously been the norm.

A third element of change involved technology. In the 1950s automobile ownership expanded dramatically. The development of transistor radios gave young people their own cheap and private access to music. Within a few years of its introduction, television provided a national medium that connected all teens throughout the nation no matter where they lived. Elvis Presley jumped from a regionally known musician to a national phenomenon through a single appearance on the Ed Sullivan show. A few years later the Beatles leapt from rumored obscurity to center stage of the national culture through the very same mechanism.

By 1960, 87 percent of the fourteen to seventeen year-olds were enrolled in school. While the high schools of this time were for the most part embodiments of the conventional paradigm, most of them were small by current standards. And in small schools students tended to be known as individuals by their teachers and administrators. Small schools, even if repressive and boring, inevitably become some sort of community in which people enact relationships with each other over time.

What James Conant’s high school consolidation movement tossed into this cultural mix was the destruction of the small high school and the dumping of millions of Baby Boom teens into larger, more impersonal schools where most young people passed through for three or four years without forming any significant relationships with any adults. This was the fourth generative element in the creation of the youth culture.

Conant’s report quieted the critique of high schools by those who wanted a core, academic, traditional curriculum. All across the nation, state governments and, at times, local governments took Conant’s recommendation on high school size to heart, and soon high school students were being bussed to much larger regional or union high schools in every state. By the early 1970s the normative experience of the majority of high school students everywhere would match that of students in large city schools, at least in terms

of the bureaucratic and impersonal qualities of their high school.

Soon after Sputnik the U.S. Congress responded to the Soviet success in rocket science by passing the *National Defense Education Act*, which supported additional high school instruction in science and mathematics. The National Science Foundation also received new funding to develop new, more rigorous curriculum for high school science. New courses in physics, chemistry, and biology were created, mostly by scientists based in universities, and these courses were adopted by a great number of high schools, with mixed success and very limited duration.

The 1960s, particularly after John Kennedy's assassination, was a time of enormous upheaval in American society. The civil rights movement, the war in Vietnam and the movement to end it, and the manifestation of a youth culture identified as a "counter-culture" all challenged the norms of American society. A few communities began to integrate schools voluntarily; many others were later compelled to do so by court orders at the end of the 1960s and in the 1970s. Much racial integration of schools began not with young children but with high schools. At times the integration of African Americans into previously white high schools took place peacefully. At other times there was disruption, hard feelings, and violence. But in most cases the paradigm of the high school remained intact. High schools were tracked, and the vast majority of students in the college prep track(s) were white. Most African Americans were placed in the general or vocational/commercial tracks.

During the latter half of the 1960s a good number of young African Americans identified with "Black power" or "Black nationalist" ideas and organizations. Black power activists in most cities rejected public schools as white-dominated and racist. Some started their own Black power schools or "freedom schools." Others sought to have African American leaders take control of public schools that served African American children. In the several years after 1966 there was much activity in African American neighborhoods in many cities in support of freedom schools. Then, at the end of the decade with the abrupt disappearance of the Black power movement came the simultaneous disappearance of these schools.

At the same time in the 1960s pedagogical progressives returned to the national stage for the first time in two decades. Books by teacher/authors such as Jonathan Kozol, John Holt, Herb Kohl, George Dennison, and James Herndon offered first-person critiques of the racism, classism, and mindlessness that were far too common in inner-city schools. While these books focused primarily on elementary schools, they nonetheless reached surprisingly large audiences and helped to create a climate both of antipathy toward the status quo in school and of advocacy for innovation. Books such as *Compulsory Mis-education* by Paul Goodman and *Coming of Age in America* by Edgar Z. Friedenberg focused on adolescent experience and found the lives of teens, including their school experience, to be fragmented, sterile, regimented, and often empty of the opportunity for critical thought. In *Crisis in the Classroom*, Charles Silberman chastised high schools for being "grim, joyless places . . . intellectually sterile and aesthetically barren," governed by "oppressive and petty . . . rules," where teachers unconsciously display contempt for their students.

In the late 1960s both reformers and radicals began to found schools that started on a continuum with the principles of the Dewey-influenced pedagogical progressives and moved toward ever more radical forms, perhaps finding the far end of this spectrum in A. S. Neill's model of Summerhill, a school where students fully directed their own learning (Neill 1960). Indeed the Summerhill model was embodied in the Sudbury Valley School near Boston. Certainly hundreds of schools and probably thousands were created in a few short years at the end of the decade, some called "alternative schools," many of which were within public school systems, and others called "free schools," which were almost always independent. Although both free schools and alternative schools never enrolled more than a small fraction of the nation's students, for several years in the late 1960s and early 1970s, they offered the prospect of the liberation of adolescents' interests, curiosity, passion, self-discipline, and idealism.

Yet just as suddenly as the freedom schools of African Americans disappeared, so did most of the free schools and alternative schools of white radicals and progressives. And the comprehensive high school remained largely as it had been before the storm of the late 1960s. Only the removal of some curricular

requirements and the addition of some greater number of electives to the high school curriculum indicated that anything had changed in the high school during the past decade, and these were both minor reforms. The industrial paradigm of the high school continued to reign.

Despite the quick exit of 1960s reforms and radicalism, there was a sense in the 1970s that order needed to be restored in public schools, that our schools needed to get “back to basics,” and that teachers could not be trusted and needed to be held accountable. This notion found its forms first in the back-to-basics movement and then in its complement, the minimum competency testing movement, which first was mandated by legislatures in California, Florida, Colorado, and Oregon in 1975. Within three years more than thirty states had adopted minimum competency testing. Most of these states required passing these tests as a requirement for high school graduation. Then most states set competency in basic skills, usually defined as reading and mathematics, at eighth grade levels, which raised questions about why eighth grade skills were adequate for high school graduation. Test administration raised many unanticipated issues. If you passed the tests, could you graduate from high school then? Did the students have a right to remediation if they failed a test? Who should articulate the basic skill standards? Who should set the passing score, and how should it be set?

Minimum competency tests had some arguably positive outcomes. They raised the issue of the need for greater alignment of curriculum among the grades as students progress through a school system. Failure rates were much higher for students of color than for white students, so the tests brought to the fore to some extent the issue of disproportional academic achievement. While the issue of racism and racist outcomes had been at the center of the debate in the 1960s, by 1975 the issue had faded from view, at least for educational leaders and policymakers, before its return with the disproportional scores on minimum competency tests. Regardless of these outcomes or of the putative accomplishment of the tests in introducing accountability to public schools, minimum competency tests were dismantled in the early 1980s as quickly as they had been established. By 1983 they were gone or on their way out in almost every state.

Even with all of the activity that minimum com-

petency tests created in schools, they had little or no effect on high schools. They were mostly set at an eighth grade level, so high schools could claim that the content and skills required for the tests had already been taught. To a great extent, only students in the general or vocational tracks failed these tests. When high schools did take up the work of remediation for failure, it was located in existing lower-level courses. So no changes were required in the structure of schools.

One longer-lasting change in high schools that did grow from events in the late 1960s and 1970s was the decline of the senior high school. In the 1960s the middle school movement started atop the failure of the junior high to serve the needs of early adolescents effectively. The most common middle school configuration was grades six to eight, and as middle schools began to spread across the nation during these years and into the 1980s, many high schools returned to a four-year configuration.

David Marshak

HIGH SCHOOL STRUCTURE AND CURRICULUM, 1983–2005

Ronald Reagan was elected president in 1980. His secretary of education, Ted Bell, appointed a commission that released a report in 1983 called *A Nation at Risk* (Gardner 1983). The report began:

If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war. As it stands, we have allowed this to happen to ourselves. We have even squandered the gains in student achievement made in the wake of the Sputnik challenge. Moreover, we have dismantled essential support systems which helped make those gains possible. We have, in effect, been committing an act of unthinking, unilateral educational disarmament.

Our society and its educational institutions seem to have lost sight of the basic purposes of schooling, and of the high expectations and disciplined effort needed to attain them. (Gardner 1983)

At a time when Americans feared that Japan and Germany might overtake them economically, *A Nation at Risk* struck a chord of anxiety in the nation's psyche despite its hysterical tone and overblown claims. Later on, Gerald Bracey, Iris Rotberg, Robert Huelskamp, and other analysts debunked many of its key assertions about school failure. But in 1983 the report ignited yet another crisis in American schooling, one which arguably continues to this day.

A Nation at Risk returned to the key ideas of the Committee of Ten: that all high school students should complete the same academically focused curriculum, and that the conventional academic subjects—English, science, mathematics, social studies, and foreign language—were more important than any other subjects. The report argued that every high school student should complete four years of English, three years each of math, science, and social studies, one-half year of computer science, with two years of foreign language for college bound students. Most states responded to these recommendations by raising graduation requirements toward this level of course completion, although only a few states followed the recommendations to the letter.

Many high schools also increased the number of advanced placement (AP) courses that they offered, and both the number of students enrolled in AP courses throughout the nation and the number of students earning college credit through AP exams began a large expansion over twenty years. These efforts were the core of what became known in the 1980s as the “excellence movement,” which also included initial actions by some states to implement standardized testing and raise the bar for initial teacher licensure and license renewal.

Soon after the publication of *A Nation at Risk*, three major educational figures published more complex, systemic, and nuanced critiques of American high schools. First, Ernest Boyer in *High School: A Report on Secondary Education in America* called comprehensive high schools a “troubled institution” (1983). But he did not want to abandon or transform the comprehensive high school; he wanted to fix it, and his remedy focused on mandating more academic coursework for all students.

Next, John Goodlad in *A Place Called School* (1984) provided a detailed critique of the ways that tracking limited the access of those youths in the general track to challenging curriculum, higher level

skills, and ultimately to college education. Goodlad explained that students of color and students from low-income families were disproportionately steered into the general track or what remained of the vocational/commercial track, which had been losing status and courses for several decades. Goodlad argued that a remedy for this discrimination lay in the creation of heterogeneously grouped classes within “a common core of studies” so all students would be guaranteed access to the same quality of learning.

Jeannie Oakes (1985), who had worked with Goodlad and had also conducted her own extensive study of tracking in high school and had detailed its racist and classist effects, and others such as Anne Wheelock (1992) took up the cause of “detracking” high schools in the late 1980s and 1990s. Some number of comprehensive high schools accepted the challenge of detracking, and a few, after significant labor on the part of their teachers to develop far more complex teaching skills to achieve differentiated instruction, achieved dramatically more equitable results at a high level of academic achievement. At the same time some unknowable number of high schools detracked in ways that lacked rigor and that alienated previously college prep track students and their parents.

Undoubtedly the vast majority of high schools, noted to be 86 percent by one study, did neither; they stood pat in the administrative progressives' paradigm of the 1920s. Even so the detracking movement soon bred a countermovement, led by some teachers of mathematics (who had perhaps the most difficult task in attempting detracking and thus who came more quickly to see the effort as either not worth the energy or not possible) and by some parents of high achieving students who had been in college prep tracks. In 1999 Tom Loveless of the no-longer-liberal Brookings Institution published a book, *The Tracking Wars: State Reform Meets School Policy*, that gave a stronger voice and better arguments to those who opposed detracking. With all of the noise and fury in both the educational and the mainstream media about tracking and detracking, the larger truth is that the detracking movement never gained critical mass to challenge the industrial paradigm of high school, which depended on differentiated tracks. This movement failed to offer an adequately systemic critique of the industrial paradigm of the high school. It never challenged class sizes of twenty-six or thirty

or thirty-three students or even more, five or six classes at a time taken by students, separate subjects, a teacher load of 150 students or more, and all the other structural and functional elements of the paradigm. In some places, the detracking movement did align itself with the block period movement, discussed below, but this common cause was never widespread enough to have a systemic impact on large numbers of high schools. And the conventional, industrial paradigm of high school makes successful detracking—where the “low level students” gain significantly from heterogeneous grouping by being removed from “dummy classes,” the “middle level students” gain some from more expert, differentiated instruction, and the “high level students” at least don’t lose anything academically and may gain from more diverse student colleagues—very difficult because it requires a deep and abiding commitment to the process, a very high level of curriculum development and teaching skills, and an enormous amount of teacher work.

While the detracking movement offered a weak challenge to the industrial paradigm of high school, none of the actions on the part of state-based political and educational leaders challenged the now sixty-plus-year-old high school paradigm at all. In contrast, Ted Sizer—the third educational leader to weigh in on the problem at this historical moment—and his colleagues had a new idea about the future course of the American high school (Sizer 1984, 1997). Sizer, a former dean of the Harvard Graduate School of Education and headmaster of the Phillips Andover Academy, had spent the previous nine years as a high school leader and teacher, thus making him one of the very few policy leaders in the United States with recent, significant experience in schools. He conducted a study of American high schools in the early 1980s, and the findings of his research team were published in several volumes, including *Horace’s Compromise: The Dilemma of the American High School* (1984/1997) and *The Shopping Mall High School: Winners and Losers in the Educational Marketplace* (Powell, Farrar, and Cohen 1985).

Sizer and his colleagues found that high schools were functioning much like shopping malls, without a coherent or challenging curriculum for most students. Most students never gained a depth of knowledge in any subject or mastery of particular intellectual skills. “The shopping mall high school is

thus profoundly neutral about mastery,” they found. “No one opposes it, but few (teachers) require or expect it” (Powell, Farrar, and Cohen 1985).

They also discovered that most teachers lived busy lives in schools in which they were isolated from each other and often distracted or even consumed by tasks that were largely irrelevant to their supposed purposes for teaching. At the same time, most students passed through their high school years without being engaged intellectually in their studies and without being known personally by any adult. Students mostly listened to the teacher talk, took notes, answered questions, and took tests. Most complied with authority, but many did as little as possible, and “high school students and teachers generally settle for mediocrity. Most classwork is modestly demanding of energy, minimally demanding of intellect, and utterly lacking in flair” (Powell, Farrar, and Cohen 1985).

The new idea of Sizer and his colleagues was to assert one part of Arthur Bestor’s “common curriculum” idea as the central purpose for high school but to wed it to many of the practices of the pedagogical progressives in the high schools of the Eight Year Study. With this formulation Sizer offered a new synthesis. Bestor argued that education should focus on intellectual training, that school should teach young people to think. Sizer, in the first of nine “common principles,” said that “the school should focus on helping young people learn to use their minds well. Schools should not be ‘comprehensive’ if such a claim is made at the expense of the school’s central intellectual purpose.”

At that point, though, Sizer diverged from Bestor and Eliot’s Committee of Ten in that he downplayed the organizing role of the traditional academic subjects, as described in his second principle:

The school’s goals should be simple: that each student master a limited number of essential skills and areas of knowledge. While these skills and areas will, to varying degrees, reflect the traditional academic disciplines, the program’s design should be shaped by the intellectual and imaginative powers and competencies that the students need, rather than by “subjects” as conventionally defined. The aphorism “less is more” should dominate: curricular decisions should be guided by the aim of thorough student mastery and achievement rather than by an effort to merely cover content. (Sizer 1997, 154)

Sizer focused on mastery and argued that less is more, or that simply covering a subject in class was worthless unless students actually gained understanding and developed skills. He embraced another element of the Committee of Ten's and Bestor's position in the first part of his third principle, although he acknowledged the need for diversity in teaching and learning strategies to achieve these goals: The school's goals should apply to all students, while the means to these goals will vary as those students themselves vary (Sizer 1984, 1997).

Sizer's other "common principles" included the following:

- Teaching and learning should be personalized to the maximum feasible extent. Efforts should be directed toward a goal that no teacher have direct responsibility for more than eighty students in the high school.
- The governing practical metaphor of the school should be student-as-worker, rather than the more familiar metaphor of teacher-as-deliverer-of-instructional-services.
- Teaching and learning should be documented and assessed with tools based on student performance of real tasks. Students not yet at appropriate levels of competence should be provided intensive support and resources to assist them quickly to meet those standards. Multiple forms of evidence, ranging from ongoing observation of the learner to completion of specific projects, should be used to better understand the learner's strengths and needs, and to plan for further assistance.
- The tone of the school should explicitly and self-consciously stress values of unanxious expectation ("I won't threaten you but I expect much of you"), of trust (until abused) and of decency (the values of fairness, generosity, and tolerance).
- The principal and teachers should perceive themselves as generalists first (teachers and scholars in general education) and specialists second (experts in but one particular discipline). Staff should expect multiple obligations (teacher-counselor-manager) and a sense of commitment to the entire school.
- Ultimate administrative and budget targets should include, in addition to total student loads per teacher of eighty or fewer pupils in the high school, substantial time for collective planning

by teachers, competitive salaries for staff, and an ultimate per-pupil cost not to exceed that at traditional schools by more than 10 percent (Sizer 1984, 1997).

The focus on personalization of learning, on multiple pathways for learning, on essential skills and depth of knowledge, and on student performance of "real tasks" linked Sizer's model to pedagogical progressive schools of the Eight Year Study. So did the de-emphasizing of traditional subjects in favor of the intellectual and imaginative powers and competencies that the students need. Also, as did the Eight Year Study, Sizer provided no specific model of what the high school should be; instead he offered a set of principles and invited schools that adopted the principles to figure out how to manifest them in their own appropriate way.

In 1984 Sizer formed the Coalition of Essential Schools (CES) to support twelve schools in seven states that wanted to enact the common principles. Over time the CES became a network that linked schools across the nation that chose to make a commitment to embody the nine common principles in their school program. Throughout the late 1980s and 1990s, the CES grew slowly but steadily, gradually extending into a majority of the states. CES schools were often criticized for not raising their students' standardized test scores in any dramatic way. In response CES school leaders explained that raising test scores was not their focus, because most standardized tests failed to measure the kinds of analytic and expressive skills and the depths of knowledge and understanding that were the outcomes of CES schools (CES National Web, 2004).

Eventually the Coalition of Essential Schools found new leadership when Sizer retired. It also adopted a tenth principle, which aligned it even more firmly with the tradition of pedagogical progressives:

The school should demonstrate nondiscriminatory and inclusive policies, practices, and pedagogies. It should model democratic practices that involve all who are directly affected by the school. The school should honor diversity and build on the strength of its communities, deliberately and explicitly challenging all forms of inequity.

By 2004 the CES included about six hundred schools throughout the nation and claimed that more than

80 percent of its high schools' students entered college compared to 63 percent overall, more than 82 percent of its African American graduates compared to 59 percent of African Americans graduates overall, and more than 87 percent of its Latino graduates compared to 42 percent of Latino graduates overall. CES high schools had an average student body of 388, and they reported a crime rate less than one-third the rate at conventional high schools.

In 1989 the first President Bush called all fifty state governors to a gathering in Virginia, and afterward the excellence movement morphed into the standards and testing movement. With nearly universal, bipartisan support from elected leaders, including Republican governors such as Lamar Alexander and Democratic governors such as Bill Clinton and Richard Riley, and from influential corporate leaders such as Louis Gerstner from IBM and Frank Shrontz from Boeing, the standards movement was adopted by forty-nine states by the mid-1990s. Each state wrote its own grade level curriculum standards, which varied from fact-based compendiums in some states to primarily concepts and skills in others. And each state then developed its own system of testing, in theory to be based on its own standards, although some states struggled to enact this relationship in their test development. By 2003 twenty-five states had implemented or were soon to implement high-stakes tests in high school for high school graduation. Only Nebraska completely resisted the powerful momentum of the standards movement.

In a way, the standards movement marked a return to the Committee of Ten's idea that all students should study the same core subjects in the same way in high school. Forty-nine states set the same high school curriculum for all students. Twenty-five states demanded that all students pass the same set of tests if they wished to receive a high school diploma. Yet as the standards movement was enacted during the 1990s, high school graduation rates declined in forty-three states. And the political leaders who brought forth the standards movement, and most of the educational leaders who enacted it, had almost nothing to say about the paradigm of American schools overall, or about the industrial paradigm of the comprehensive high school in particular. It seems that somehow they expected curriculum standards and tests to accomplish by themselves what the tracked, comprehensive high school had never before accomplished.

In the 1990s while the standards movement, which

came almost exclusively from outside of schools, was gaining political momentum and then moving into law and implementation, teaching, and testing, an entirely different kind of movement rose up within high schools from teachers and principals themselves. This was a movement from periods of less than an hour, which had been codified by Charles Eliot in 1893, to periods of 75 or 90 or 100 or even 110 minutes, labeled block periods. Several block period experiments had begun in the 1980s after *A Nation at Risk*, including the so-called Copernican Plan, which integrated both block and regular periods. But early in the 1990s the adoption of block period schedules took off. In southern states with large countywide districts, much of the implementation was imposed on high school faculties by superintendents. But elsewhere in the nation almost all block period adoption took place through the agreement of the majority of teachers in a given school to try out this new schedule, with the innovation led by teachers or the principal or, in some cases, both.

While there was no firm data on the number of block period adoptions that took place, some observers claimed that as many as 40 percent or perhaps even more of American high schools had implemented some form of block period schedules. The two most popular block period formats were called the A/B schedule and the four-period day. The former kept the common six-period schedule, doubled the length of each period, and had classes meet every other day (this was the easier adoption, since it only changed the length of the period, nothing else). A variant was the A/B/C plan, which kept one day with all six short periods and four days with block periods and classes every other day.

The four-period day restructured the school day into four periods of ninety minutes each, with students taking four classes and teachers teaching three classes each semester. Courses became one semester in length. While the four-period day began to change the high school structure in some significant ways (student load of only ninety at a time, a ninety-minute planning period every day for teachers and three classes as the typical load), it offered its own set of problems, particularly for those who sought to maintain the range of choices available in the comprehensive high school. With courses completed in a semester, such as all of Math 10 or French I, scheduling subjects that demanded a sequence, primarily math, world languages, and music, was problematic. Would a student take Math 9 in the first semester

of ninth grade and Math 10 in the second semester of tenth grade? Would it matter? Also, with only four periods available, music and art courses could be deprived of students, particularly of students from honors and college prep tracks.

One purpose for block periods was to allow and support teaching and learning activities that both increased student engagement and generated and nurtured heightened student initiative and responsibility. Another purpose was to promote in-depth study of topics as opposed to coverage. Longer periods gave time for group work, research, writing, discussion, and debate, all of which banished lecture from center stage and replaced it with student activity. When students experienced themselves as active learners in the block period classroom, they were more engaged, cared about their learning more, and created better academic products than when they were simply receivers of information.

When teachers used the block period well, they often provided their students with both increased independence from direct adult control and with increased responsibility. These teachers wanted more from their students: more engagement, more caring about learning, more effort, more willingness to be responsible, and more initiative. They offered students more choice, more control, more respect for students' interests and capabilities, more collaborative effort and common cause. And in some action research studies conducted by teachers (Marshak 1999), a significant majority of students accepted the new arrangements offered by their teachers and performed as learners at new, higher levels of engagement and initiative, accomplishment, and sophistication. These studies showed the potential of teaching focused on student engagement in block periods could begin to challenge some elements of the conventional high school paradigm.

On the whole, though, studies of block period learning outcomes have had inconsistent results. Some have shown positive outcomes; others have not, in particular studies that have measured only standardized test scores (ASCD 2004). Some teachers used the longer periods effectively and inventively; some did not. Teachers of mathematics, world languages, and music were overrepresented in the group of teachers who were opposed to block periods, while the majority of teachers from other subjects who had experienced block periods said that they wanted to

keep them. Students also had mixed feelings about block periods, depending directly on how much the teacher provided opportunities for students to be active and engaged—or passive and bored for a seemingly interminable 100 minutes.

Overall it seems that most of the schools that changed to a block period schedule have maintained that schedule as of 2004. The block period has chipped away some at the industrial paradigm of high school, but it has not overturned it.

The small high schools movement, which started most notably with Central Park East Secondary School in Manhattan, led by Deborah Meier, began in the mid-1980s and gathered some momentum in the 1990s, particularly in New York City, Chicago, and Philadelphia. In 1989 the Carnegie Foundation Council on Adolescent Development published a report called *Turning Points: Preparing Youth for the 21st Century* (Carnegie Council on Adolescent Development 1989). This report focused explicitly on middle schools, but one author (Marshak 1995) noted in *The High School Magazine* in 1995 that its proposals were a call to action for high school paradigm transformation from the large comprehensive high school to a new small schools model. The *Turning Points* report included, among others, the following recommendations:

- Create small communities for learning. (Subsequent research has shown that these learning communities work best when they are autonomous schools with their own identity, mission, leadership, staff, and budget.)
- Create experiences of success for all students.
- Eliminate tracking.
- Empower teachers—and related administrators—to make curricular and instructional decisions for their students.
- Employ teachers who are expert at teaching adolescents—and who value, like, and appreciate adolescents.
- Engage families in the education of their adolescent children.
- Re-connect high schools with their communities.

Most of the founders and leaders of these small high schools were pedagogical progressives, and they rejected Conant, Bestor, and Eliot; that is, they rejected both the concept of core curriculum for all and the comprehensive high school. They argued that effec-

tive education for adolescents started from personalization, from relationships between students and teachers and among students, and from establishing the school as a genuine community. They also maintained that for a faculty to work together and co-create a high school, it had to be small enough, as Meier wrote (Meier 2002), to sit around the table and have a conversation—no more than twenty people. Particularly for students who were likely to be alienated from or disaffected in conventional high schools, but actually for all adolescents, teachers who knew their students as individuals and who worked with them for more than one year were much better able to guide and support students towards high academic achievement. Many of the small high schools in New York City provided evidence in support of this contention in that their dropout rates were far lower than district norms and their college attendance rates were much higher.

The small high schools movement was largely aligned with the Coalition of Essential Schools in its values, and many small high schools formally joined the CES. However, this movement was transformed from a still relatively small collection of several hundred schools into a force that may yet transform the paradigm of American high schools when, beginning in 2001, the Bill and Melinda Gates Foundation selected “small high schools (ideally 400 students or fewer) that can provide a personalized learning environment where every student has an adult advocate” as its primary educational endeavor. Citing the 1990s research as had previous small high school advocates, the Gates Foundation’s educational director, Tom Vander Ark, noted that small high schools are much safer, students are more actively engaged in learning and in the life of the school, dropout rates are significantly lower, and more graduates go to college; small high schools are more able to educate students of color and students from low-income families who are more likely to drop out of conventional high schools.

Since 2001 the Gates Foundation has invested more than \$600 million to support 1,457 small high schools, some completely new schools and others involving conversions from large, conventional high schools. Vander Ark has said that the goal of the Gates Foundation is to transform the American high school (www.gatesfoundation.org 2004). The Foundation cites “a new 3 Rs” as central to high school success:

meaningful, supportive relationships, a relevant curriculum, and rigorous instruction. Small high schools provide an environment where significant relationships between students and teachers are possible. The existence of such relationships can help teachers to offer a curriculum that is relevant to students’ interests and concerns. Both of these elements link the Gates Foundation’s vision for high school to the notions of pedagogical progressives and of the Eight Year Study.

Rigorous instruction is the third key element. Historically, rigorous instruction has been linked most often to core curriculum advocates. Eliot and the Committee of Ten as well as Bestor and Rickover called for the equivalent of rigorous instruction. The comprehensive high school has usually provided rigorous instruction only to those in the top track(s). In contrast, pedagogical progressives have often been criticized for eschewing rigorous instruction. Clearly some have done so, but a careful examination of the Eight Year Study and of CES publications gives many examples of deep, complex, and meaningful learning—and instruction that is far more student-centered than the conventional paradigm’s instruction (which is highly teacher-centered). This instruction is nonetheless rigorous, though sometimes in unconventional ways. These documents show that intellectual rigor can be a key element of the learning and teaching in pedagogically progressive high schools where teachers value rigor.

The Gates Foundation’s program draws directly from the small high schools movement and is deeply aligned with the values of the Coalition of Essential Schools. A document on the foundation’s website lists the “essential components of teaching and learning” as active inquiry, in-depth learning, and performance assessment, which are all included in the common principles of the CES. While the foundation has focused on “smallness” as a necessary component of its high school paradigm (no more than 400 students in a school), it has funded schools based on three different organizing principles: conventional academic subjects with rigor, relationships, and a college orientation; theme-based schools, with a curriculum focused on a specific theme such as the arts, technology, or the environment; and highly individualized schools with a focus on projects and internships. Clearly the Gates Foundation’s initiative and enormous financial resources will give this new

paradigm of high school every opportunity to take hold in American communities.

In 2002 Congress passed and the second President Bush signed the *No Child Left Behind Act* (NCLB). While most of its impact was felt by elementary and middle schools, the act requires every student to take tests in reading and mathematics (by 2005/06) and in science (by 2006/07) at least once in the high school years. These test scores are subject to the rules of NCLB, which means that high school test scores must improve by the amount required in each state every year. If a school's test scores fail to improve in every single listed student category (e.g., low income, African American, special education) two years in a row, then the school is declared to be "needing improvement" and a host of penalties and punishments begin. It is not at all clear at this time how the NCLB program will affect high schools.

In 2004 the American Diploma Project released its report, *Ready or Not: Creating a High School Diploma that Counts* (American Diploma Project 2004). This project was the work of an unusual collaboration among the Education Trust (a civil rights nonprofit organization advocating for the needs of children of color and children from low-income families), Achieve (a nonprofit organization dedicated to promoting the standards and testing model of schooling), and the Thomas B. Fordham Foundation (the institutional home of Chester Finn, perhaps the most effective conservative Republican in educational policy circles). *Ready or Not* argues that the "high wage, high growth" industries of the Information Age require highly skilled, college educated workers and thus high schools need to prepare all young people to attend and graduate from college. High schools should accomplish this goal by educating all students to meet the standards of what is now the honors track in conventional comprehensive high schools. Of course, *Ready or Not* is largely a return to the argument made by Eliot and the Committee of Ten in 1893, except that Eliot and his colleagues could never have imagined that their recommendations might one day be applied to all students, not just the small elite enrolled in high schools in their day.

Finally, schools in 2005 have not been so racially unbalanced since 1968 when a series of Supreme Court decisions moved school desegregation from promise to reality in a good number of school districts. School integration by race reached its high point in the late

1980s. Since then the United States has re-segregated to a significant extent, and most white, African American, and Latino students attend schools where they are in the racial or ethnic majority.

In 2005 enormous forces are arrayed to challenge the twentieth century industrial paradigm of the comprehensive high school. Will personalization and small schools become the new paradigm? Will the only high school curriculum become what is now the honors track? Will schools become increasingly segregated by race, ethnicity, and class? It is not at all clear what will happen next.

David Marshak

LEARNING AND TEACHING IN HIGH SCHOOL

The National Research Council cited three key components of effective learning in its 1999 report, titled *How People Learn: Bridging Research and Practice*:

1. Active inquiry: "Students are engaged in active participation, exploration, and research; activities draw out perceptions and develop understanding; students are encouraged to make decisions about their learning; and teachers utilize the diverse experiences of students to build effective learning experiences."
2. In-depth learning: "The focus is on competence, not coverage. Students struggle with complex problems, explore core concepts to develop deep understanding, and apply knowledge to real world contexts."
3. Performance assessment: "Clear expectations define what students should know and be able to do; students produce quality work products and present to real audiences; student work shows evidence of understanding, not just recall; assessment tasks allow students to exhibit higher-order thinking; and teachers and students set learning goals and monitor progress."

This is a description of learning that some educational psychologists call constructivism as opposed

to behaviorism. Some curriculum theorists call it transaction as opposed to transmission (Miller and Seller 1990). It is a description of learning that implicitly defines teaching as activities that promote active inquiry and in-depth learning and that employ the tools of performance assessment.

The industrial, conventional paradigm of high school has historically relied on behaviorism, or transmission, as its theory of learning. In this theory, knowledge exists outside of the learner, and the teacher's role is to move the knowledge into the learner's memory, at least long enough so that the learner can restate the knowledge on a test. To a significant extent the transmission theory encourages "teacher talk" in high school classrooms, either through direct lecture or through a form of whole class "discussion" in which teachers do ask some questions and elicit responses from students but actually devote the majority of classtime to their own comments. When teachers talk much or most of the time in class, at best students are actively listening. Much more often students are passive or disengaged.

Of course, this identification of the primary pedagogy in conventional paradigm high schools as teacher talk is a vast generalization to which many exceptions can be cited (for example, labs in science classes, working out problems in math classes, conducting library research in social studies classes, and engaging in skill practice, writing, or research on a computer). Nonetheless a variety of studies at different points during the twentieth century have confirmed that in conventional class periods of less than an hour, more than anything else, teachers talk and students are supposed to listen.

One reason for this pedagogical dominance is that constructivist or transactional teaching requires learners to be actively engaged in the process of gaining knowledge and building understanding. Active engagement means doing, not just listening: learners talking with each other and with the teacher, researching, writing, exploring, experimenting, making, debating, and so on. Active engagement requires time, because doing requires more time, and sometimes much more time, than listening to the teacher talk about a topic. Teacher talk is very efficient for covering the material. It is not as effective, though, if the goal is for students to learn. But if the teacher only has fifty minutes with students, the limitations of time often pres-

sure the teacher toward a transmission approach, both because there is so much curriculum to be covered and because the fifty-minute period makes it difficult or impossible to conduct many constructivist activities that require longer blocks of time.

Constructivist theory would not ban teacher talk, because such expression is obviously necessary in the classroom. Indeed, lecture can be a very useful instructional tool when it is used appropriately. But constructivists would reduce overall teacher talk significantly and remove lecture and teacher-centered "discussion" from the central pedagogical role in high schools.

Some critics have claimed that constructivists reject the need for students to learn facts, concepts, and skills (Rochester 2002). This is certainly not the case for constructivists whose theory and practice are grounded in the actual learning experience of adolescents in schools and elsewhere. This constructivist position requires a dialectic between the society and the individual learner, between transmission and transaction, between the artifacts of the culture and the learner's capacity for inquiry, meaning-making, and self-direction of learning. Thus, it is important for students to learn significant facts, concepts, and skills that are deemed to have value in the society. At the same time, the more that students are actively engaged, allowed and encouraged to develop deep understandings that relate to their own meaning-making about their lives, and involved in setting their own learning goals and monitoring their own progress, the more likely they are to be successful learners both in terms of transmission and transaction. Constructivist theory argues then that these qualities of learning are integral, not opposed, and that deep understanding results from the pursuit of this integrality. Each learner constructs her/his own knowledge and skill base, which inevitably contains elements that are common to many as well as those that are personal and unique.

One outcome of the introduction of block periods into conventional paradigm high schools in the 1990s was that a significant number of teachers (probably not a majority, although there are no convincing data on this question) were encouraged by the new expanse of time that they had in each period to incorporate more constructivist teaching methods into their repertoire. Many teachers in block peri-

ods let go of some or much teacher talk and employed more group work, projects, in-class research and writing, simulations, and so on. The simultaneous introduction of access to the Internet also encouraged these teachers to draw on a growing array of Internet-based learning activities.

It is not at all clear how much of this pedagogical shift has taken place in block period high schools, but it seems safe to say that block periods and their concomitant changes in teaching styles have not profoundly altered the conventional paradigm of high school. On the other hand, high schools that have fully integrated all ten of the Coalition of Essential Schools' common principles into their school structure and daily life are pioneering—or reinventing the pioneering of the pedagogical progressives from some of the Eight Year Study schools—a high school paradigm founded on constructivist theory. The CES principles embrace constructivism, as does the small high school model propounded by the Gates Foundation, which cites *How People Learn* from the National Research Council as one of its foundational sources.

David Marshak

ASSESSMENT IN HIGH SCHOOL AT THE START OF THE TWENTY- FIRST CENTURY

Assessment in the context of education can be defined in terms of both process and purpose. The process of educational assessment is that of gathering evidence and making inferences from that evidence in order to address a variety of needs. Different needs come from different stakeholders in education. Students, for example, need to know how they are progressing and what to do next as they build their understanding of how to write a persuasive essay. Teachers need to know whether a set of lessons on the relationship between percents and fractions was successful. Parents need feedback on how their child is doing academically in the difficult transition from middle to high school. Principals, district administrators, legislators, and the citizenry in general may all have various reasons to engage in or make use of

the results of educational assessment. Accordingly, educational assessment can take many forms. The primary concern in this discussion is to address classroom-based assessment in the high school.

The purpose of assessment in this context is to find out what students know, what they understand, what they can do, and what are their attitudes and inclinations with regard to an educational objective. Teachers do not have direct access to these data. They cannot be measured directly the way we measure the volume of liquid in a vessel or money in a bank account. Instead, teachers must observe students' actions and deduce where students are in the journey toward a desired objective. The purpose of educational assessment, then, is to use external indicators to make inferences about an internal state.

Assessment must be distinguished from evaluation. Consistent with the general statement made above, classroom-based assessment is defined as the process of gathering evidence about a student's knowledge of, ability to use, and disposition toward the area under study; it is also the process of making inferences from that evidence for a variety of purposes. Evaluation is defined as the process of determining the worth of, or assigning a value to, something on the basis of careful examination and judgment. Evaluation, therefore, is one of the uses of assessment information.

In current and ongoing efforts to reform education, a good deal of attention is given to the role of classroom-based assessment. This has not always been the case. Lorrie Shepard (2000) has pointed out that in previous volumes of the *Handbook of Research on Teaching*, there was no specific chapter on classroom-based assessment. Preservice teachers in traditional courses on educational measurement learned about deciles, test item formats, and the use of the bell curve to understand the distribution of test scores. These concepts served the needs of the psychometrician seeking to understand the results of large-scale external assessments, but were of little use for the classroom teacher. Likewise, few connections were made to the role of assessment in courses on methods of teaching. As a result, many high school teachers subscribe to the "teach, test, and hope for the best" school of assessment in which tests are created by the teacher at the end of a unit. These tests tend to emphasize low-level knowledge and function as a means of evaluation and the assignment of grades.

This approach to assessment is consistent with a view of learning that was prominent throughout most of the twentieth century. For example, the 1960 edition of the *Encyclopedia of Educational Research* emphasized behaviorism as the dominant conception of how learning took place. For the behaviorist, learning is seen as the accumulation of stimulus-response associations and the learner is seen as more or less passive. Things are done to the learner and the results are evaluated through the examination of test data. Testing, often identified as “scientific measurement,” was performed after instruction in order to evaluate its effectiveness.

At present, constructivism has replaced behaviorism as the dominant conception of the process of learning, at least in the conceptual frameworks of most educational psychologists. Constructivism emphasizes the active role of the learner in the process of building understanding and acknowledges the importance of both the learner’s background and the social environment in which the learning occurs. Ernst von Glasersfeld (1990) states “Knowledge is not passively received either through the senses or by way of communication. Knowledge is actively built up by the cognizing subject.” In this constructive process the learner is constantly interacting with the perceived environment in which the learning takes place. Feedback that alerts the learner as to the success of his or her learning keeps the learner on a more direct route to the learning goal. Thus, while testing served as a periodic evaluation of the degree of progress made, assessment addresses the learner’s need for more frequent interaction with the environment, guiding the active learner to make judgments about his or her own learning. Assessment, as opposed to testing and evaluation, has assumed a more important role in the processes of teaching and learning.

The culture of school has a great deal of momentum and changes very slowly. The “teach, test, and hope for the best” approach in which evaluation is emphasized and where assessment is mostly confined to quizzes and end-of-chapter or unit tests is still the norm. That culture is shifting, however, as may be inferred from the attention given to assessment at educational conferences and in the discipline-specific journals used by teachers. As this change takes hold, other parts of the curriculum puzzle are shifting in response. In a recent book that has received a good deal of attention, G. Wiggins and J. McTighe (1999)

proposed the “backward” model for curriculum design. Typical curriculum design begins with the determination of learning targets, proceeds to specification of the instructional activities, and confines assessment to a test. The purpose of the test is generally to evaluate the learning and to serve the need to rank order the students at the end of the unit. Backward design also begins with the learning targets but then proceeds directly to the assessment. The question is “What would a successful student know, be able to do, and so on?” Once this question has been answered and the appropriate assessment has been determined, the instructional activities are designed with these ends in mind. Assessment shifts from an afterthought to a driver in the teaching process. Along the same lines, teachers are gradually coming to realize that assessment can be used more flexibly in order to serve the day-to-day needs of students and teachers.

It has been argued that the current drive to implement an ever-expanding battery of standardized tests has been detrimental to this evolution of teachers’ conception of assessment. If assessment is closely identified with tests imposed by external authorities, and used to judge teachers as well as students, attention to the development of a more productive understanding of classroom-based assessment may suffer.

It is important to understand some of the terminology used in the field of classroom-based assessment. Assessment may be classed as formative or summative, informal or formal, and authentic or decontextualized. First, formative assessment is that which serves the purpose of modifying instruction. A teacher who gives a pop quiz in order to find out whether students have grasped the highlights of an interactive discussion or who, near the end of class, asks students to write a paragraph summarizing what they know and what they still wonder about the subject of the day’s lesson may be engaged in formative assessment. The results of the assessment will be used to make decisions about pedagogical next steps. Summative assessment is more akin to evaluation in that the results of the learning process are being summed up. The purpose of summative assessment is to measure the degree to which students have achieved the learning objectives. The test at the end of the chapter and the final exam are examples of summative assessments. Of course summative assess-

ments may yield information that can be used for formative purposes. The difference between the two is primarily a matter of the intent of the assessor.

Assessment can also be identified as either formal or informal. Formal assessment is characterized by the fact that there is a cessation of instruction in order to accomplish the assessment. There is an hour set aside on Friday for the unit test. Learning stops, and it's time to find out what was learned. Formal assessment is often summative. Informal assessment more often takes place as part of the learning process. The teacher, in order to give the students a chance to draw together their understanding of the process, may ask students working in a small group to explain their reasoning. As may be inferred from these examples, formal evaluation is often though not necessarily summative while informal assessment is more often formative.

Authentic assessment differs from decontextualized assessment in that the tasks used in an authentic assessment are more like those that would occur in the context the learning is meant to serve. For example, if a teacher wants to use authentic assessment to find out whether students understand division of two-digit numbers, she might observe students in a setting where division will enable students to solve a perceived problem. The decontextualized version of this process is, as the name implies, one in which the context has been stripped from the task. Students may be presented with a set of two-digit numbers and asked to find their quotients. The information obtained in these two settings is quite different. Good teachers use these techniques according to the assessment needs of their students.

The process of assessment can take many forms. The following sequence of steps is illustrative of the general pattern. The first step is the determination of the desired outcomes or learning targets. Learning targets are statements about what students must know and understand, about skills they must develop, and about attitudes and inclinations that are important in the area under study and that are to be cultivated in students. The teacher must have a clear understanding of these targets and must be able to convey them to the students and, sometimes, to external stakeholders such as parents, principals, and colleagues. The next step is the specification of evidence. Teachers must be able to describe student actions that will convince the teacher that the learning target has been achieved.

The required evidence may be as simple as a specified score on a multiple-choice test, or it may be an extended description of actions to be observed in a performance or a written report. Evidence may be expressed in the form of an assessment rubric or scoring guide that specifies evaluative criteria, quality definitions, and a scoring strategy. Having devised learning targets and specified the desired evidence, the teacher must give the students a chance to provide that evidence. This third step is the design and administration of the assessment itself. An assessment may be formal and summative as with a term paper or an oral exam scored according to specified criteria (evidence), or it may be informal and formative as with a class discussion that gives the teacher a clearer picture of the group's abilities and inclinations and provides direction for tomorrow's activities. Regardless of the exact nature of the assessment, the outcome is information about the degree to which students have met the learning targets. The final step is the interpretation of these data and the determination of subsequent action to be taken.

Mark Roddy

CONFUSION OF PURPOSE, LACK OF RESPECT: THE HIGH SCHOOL DILEMMA

Some writers claim that the comprehensive high school of the twentieth century has failed. Since the high school's role is central to the development of the American culture and economy in these years, claiming failure for the high school would require a simultaneous claim of failure for the entire American society. Clearly such a claim has no merit.

The twentieth-century comprehensive high school has succeeded far beyond the expectations of the paradigm's founders, be they Eliot and the Committee of Ten or Cubberly and the administrative progressives. It has educated most of the population in ways that prepared them for higher education or the workplace at least somewhat well. And for the most part it has provided a safe place for adolescents to spend their days, particularly since as the century

unfolded, there were fewer and fewer locations where adolescents were allowed to be during the daytime.

However, it is also evident that the industrial paradigm comprehensive high school has not fulfilled some of the most important promises that its advocates have made in its name. Institutional racism and classism abound, as does anonymity. Most teens are cast adrift from the adults who teach them, even though they encounter each other every day, and most teens live in a peer society bereft of adequate adult influence. Some conventionally talented students are not adequately challenged. Many talented young people from communities of color do not find their talents recognized and nurtured. Very few young people learn how to act as citizens in a democracy because most comprehensive high schools have no meaningful democratic contexts.

Some political leaders and economists, noting the advent of the Information Age and the intensifying removal of manufacturing from the United States by American and other corporations, argue that high school must equip all young people to succeed in college, because in the future only those jobs that require college-level skills and knowledge will pay enough to support a family. Other political leaders and economists counter that the American economy continues to generate increasing numbers of service industry jobs that are not high skill; such jobs, however, only pay at levels that add more people to the ranks of the working poor. These leaders and economists maintain that the economic problem is not educational but political. Since 1981, federal and state government policies have transferred wealth from the middle class and working class to the upper class and have acted in multiple ways to lower the income in real dollars of those in low-skill service jobs.

Whichever version of events is more accurate, the comprehensive high school today certainly fails to prepare most students to be active, engaged, responsible citizens of a democracy, and it fails to prepare far too many students to succeed economically. The Coalition of Essential Schools' high school paradigm and some manifestations of the Gates Foundation's paradigm seek to remedy the former failure. No one else working in high school reform in 2005 seems interested in addressing this concern, including none of America's elected leaders.

The CES paradigm and the Gates Foundation's paradigm, which often but not always overlap, also

claim to respond to the need to prepare students to succeed economically, and they offer some data from the past fifteen years to support their claims. In contrast the standards and testing movement claims that it already has the answer for preparing young people to succeed economically. Standards and testing systems have been enacted into law in forty-nine states by Republicans and Democrats alike and are supported by a wide array of corporate leaders. Some states such as Massachusetts have publicized what its leaders call success with standards and high-stakes testing in which students must pass certain tests to earn a high school diploma, because the percentage of students passing the tests has increased to high levels. Yet as states enacted standards and testing in the 1990s, high-school graduation rates decreased in the forty-three states. Only time will tell if this trend is reversed during the current decade. So far no research has connected standards and testing in high school with any kind of positive outcomes later in life.

State-mandated tests, however, often reflect a transmission or behavioristic view of learning, placing a greater emphasis on the memorization and recall of data than on more constructivist orientations to knowledge, such as deep and complex understanding, personal interpretation and analysis, and creativity and problem solving. Some leaders in CES high schools in New York State and elsewhere have fought against state-mandated tests or sought exception from them, because they have argued that such tests fail to recognize and assess the high-level skills their students have developed in writing, problem solving, creative expression, and complex analysis. This conflict between high school paradigms once again raises the fundamental question for high schools that has endured since their first codification in 1893: What is the high school's purpose?

Finally, despite all of the enormous labor focused on high school change over the past twenty years, in one profound way the cultural meanings attributed to high school have not changed at all. To a significant and destructive degree, Americans do not seem to value high schools as places of learning:

- Looking at American newspapers, one would think that high schools exist primarily for athletic teams and test scores. There is almost no reporting on the phenomenology of learning and teaching.
- Television shows and movies that purport to show

high school life are almost never realistic in their portrayal; rather than learning and teaching, they focus on sex, violence, and sensationalism.

- On the rare occasion when media do focus on teaching and learning, they present only “teacher as superhero” stories, not realistic portrayals of excellent teachers who teach well.
- Many adults tend to romanticize high school by the time their own children arrive in one. The stress, the boredom, the competition, the anxiety are forgotten, and only the fond memories remain. Many parents tell their children to relax, that high school is the best four years of their lives.
- The majority of high school students work outside of school. While some work to help out their parents economically, most work for their own spending money. Some studies show that working less than eighteen or twenty hours a week correlates with higher grades in high school; beyond twenty hours, grades go down. In either case, adults often give their children

mixed messages when it comes to school and work. They say, “School is the most important thing,” and then they say, “If you want money for yourself, get a job.”

To paraphrase the words of a late American comedian, “High school doesn’t get any respect.” American adults ignore it, ridicule it, take it for granted, romanticize it. High school teachers are not paid well, are badgered relentlessly by politicians and the media, have been disempowered in recent decades by Congress and state legislatures, and they have seen their perceived value to the society diminished.

If Americans want high school to be different, to be better, then we need to change the way we treat high school as an institution and the people who work in and attend high schools. A first significant step in this direction would be to give high schools the respect they most certainly deserve.

David Marshak

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WEBSITE RESOURCES

The Bill and Melinda Gates Foundation: www.gatesfoundation.org.
Coalition of Essential Schools, CES National Web: www.essentialschools.org.

ADULT LEARNING AND DEVELOPMENT TODAY

The adult education and literacy system in the United States is one sector of the nation's overall education system that remains largely unrecognized and misunderstood. In this chapter, we provide some fundamental information about the theoretical heritage of adult learning and development, the goals of the adult education and literacy system, as well as a description of the adults served by this system. We also identify and discuss several concerns about the mission and quality of the adult education services that largely remain unresolved. Note that throughout this chapter, we will use the terms "adult education and literacy system" and "adult education" interchangeably to refer to the same educational sector.

The adult education and literacy system is composed of a broad network of educational services predominantly funded by the *Workforce Investment Act of 1998* (WIA). One way of understanding the scope of these services is to examine the various outcomes given priority within the present system. Federal data on the human investment impact of the adult education system indicates that over the years 1993-1998 (U.S. Department of Education 2003a), these outcomes were achieved:

- 823,155 entered other training
- 257,730 obtained U.S. citizenship
- 274,496 registered to vote
- 676,855 retained employment or advanced in their jobs
- 746,084 gained employment
- 161,960 were removed from public assistance
- 1,182,094 gained basic English literacy skills

Similar outcomes have been cited as clear evidence of the important role that adult education programs

play in the United States's overall educational system (Beder 1989). Despite these telling numbers, Sticht observes, the value of the adult education and literacy system in the United States remains underestimated by the public, as well as by many state and federal policymakers (Sticht 2004). The system is often regarded as a "second-chance" education.

We view the aforementioned list of adult education outcomes prioritized under the *Workforce Investment Act of 1998* as a list of the kinds of potential changes—or life improvements, as termed by Hannah Fingeret and Cassandra Drennon (1997)—in the lives of adult learners that the adult education system seeks to accomplish. Adult learners enrolled in adult education programs experience changes in other ways that are not easily quantified but equally significant, such as motivation to pursue further learning, increased self-confidence as a learner, or improved self-efficacy as a worker, citizen, or parent. In this chapter, we provide the reader with an understanding of change as a key construct of adult learning and development theories and also change as a policy goal of the adult educational system. This two-pronged approach to the discussion of change in the lives of adult learners enables us to highlight areas where adult learning and developmental theory intersect with adult education practice and policy, as well as areas where these bridges in thinking have yet to be fully explored.

One challenge in preparing a chapter on adult education is the complexity of defining "adult learner." There is a lack of clarity regarding what constitutes an adult learner. We have attempted to blend definitions culled from theory as well as policy to show overlap and differences. In the early history of adult education in the United States, age was the primary criterion for defining an adult. For example,

as part of census data collections in the mid-1800s, illiteracy rates were based on the skills of individuals who were at least ten years old, and in the early 1900s, of individuals who were at least twenty years old (Sticht 2003). A widely accepted definition of “adult learner” was put forth by Arthur Chickering (1969) who viewed an adult learner as someone whose major life role is something other than being a full-time student. We use this definition in our chapter because it acknowledges the various roles and responsibilities that adult learners must tend to while they pursue an education. Currently, the adults served by government-funded programs under the *Workforce Investment Act of 1998* include those individuals aged sixteen or older who are not enrolled in school and do not possess a high school diploma. While out-of-school youth are included in the policy’s targeted population, the adult education field is not in agreement about whether adult education programs should bear the responsibility of educating an increasing number of teenage youth. Although “adults” of this age group fall under the purview of adult education programming, they do not easily fit into theoretical paradigms as teenagers are considered part of adolescent, not adult, development. The issue of youth enrollment in adult education is a topic we address in more detail below.

This chapter begins with some basic facts and figures about the adult education and literacy system, such as enrollment numbers, areas of rapid growth, and levels of federal and state funding. This review is followed by a theoretical history of adult learning and development, which highlights the evolving orientations toward the nature of change. We present this theoretical review before our more detailed description of the adult education system to provide the reader with an understanding of the historical legacy in adult learning and adult development that informs (or in most cases, has yet to inform) practice and policy in the adult education field. We also present this information first because it provides an important foundation for gaining insight into several enduring complexities and debates facing the current adult education system that are discussed toward the end of the chapter. The chapter ends with an implications section in which we highlight areas of adult learning theory and development which merit examination in the adult education context. Specifically, we discuss ways that adult education

practice and policy can work to ensure that changes, such as finding employment, becoming a citizen, or leaving welfare, are optimally meaningful to the adult learners who experience them. Finally, we discuss the implications of ideas presented in this chapter and provide a list of suggested activities for further reflection.

SOME FACTS ABOUT THE ADULT BASIC EDUCATION SYSTEM

The *Workforce Investment Act of 1998*, which effectively replaced the *Adult Education Act of 1964* and the *National Literacy Act of 1991*, along with its constituent *Title II: The Adult Education and Family Literacy Act (AEFLA)*, represent the principal sources of funding for adult education and literacy programs targeting adults sixteen and older who do not possess a high school diploma or an equivalent, who are not currently enrolled in school, or who possess a high school diploma but need English language and literacy skills. Also, according to WIA, adult education refers to those services below the post-secondary level. From this perspective, there are three basic categories of program services: adult basic education (ABE), adult secondary education (ASE), and adult English to Speakers of Other Languages (ESOL, also referred to as English as a Second Language [ESL]). Adult basic education or ABE programs are geared towards native English speakers or proficient English speakers who read at lower than an eighth grade level, while adult secondary education (ASE) or General Educational Development (GED) programs are geared towards those adults who are already reading at an eighth grade level or above. Adult English to Speakers of Other Languages (ESOL) programs are designed to serve adults whose primary language is one other than English and who need to develop English language and literacy skills.

According to the Department of Education, the 2000 national enrollment in federally funded adult education programs totaled 2,891,895, with adults in ESL programs (38 percent) composing the largest proportion of the overall enrollment, followed by adults in ABE (37 percent) and in ASE (25 percent) (U.S. Department of Education 2001a). These enrollments likely underestimate the actual enrollment in adult education as many adults also

enroll in non-federally funded programs in the higher education system and are not included in these figures.

The adult ESOL learner population represents the fastest growing sector of the adult education system. In fact, some kind of ESL instruction is provided in nearly 70 percent of federally-funded adult education programs, while 21 percent of programs are predominantly ESL-only programs (Center for Adult English Language Acquisition 1999). In 2000, approximately 64 percent of the total adult ESOL enrollment resided in five states—California, Florida, New York, Illinois, and Texas (U.S. Department of Education 2001a), although nearly every state has experienced marked increases in their adult ESOL enrollment numbers (Tracy-Mumford 1999).

In many states, such as California and Texas, the adult basic education system consists of a network of multiple providers, including public adult schools, community colleges, libraries, community-based organizations, faith-based organization, and correctional institutions. In Connecticut and Hawaii, the adult basic education system is governed by the state Department of Education, while in other states, such as Iowa and Oregon, the state community college system is the primary provider of adult basic education services (Council for the Advancement of Adult Literacy 2003). In 1996, 59 percent of the recipients of adult education grants were awarded to local educational agencies, 15 percent to post-secondary institutions (mostly community colleges), and 14 percent to community-based organizations (Alamprese, unpublished manuscript). Correctional programs make up another 4 percent of grant recipients. Eight percent of the grants were awarded to various providers, such as libraries, private industry, and literacy organizations (Alamprese, unpublished manuscript). The effectiveness of programs is monitored under the WIA/AEFLA through the National Reporting System (NRS) for Adult Education which requires states to develop outcome-based performance standards for their adult education programs (U.S. Department of Education 2001b).

Although developmental (or remedial) post-secondary education is not targeted under WIA/AEFLA and generally is considered to be a separate education system from the adult education system,

the adult learners in these two systems often demonstrate similar basic skill needs (Reder 2000). With the implementation of WIA and its focus on workforce development, post-secondary institutions play an increasingly important role in the provision of adult education services. For example, workforce development programs based at two-year colleges represent the most rapidly expanding sector of higher education services in several states (Education Commission of the Fifty States 2000).

The lack of adequate funding is a chronic reality in the U.S. adult education system. In 2002, \$494.8 million in federal funds were directed toward adult education programming, with an additional \$70 million spent on English literacy and civics programs (U.S. Department of Education 2002). In 1998, per-student expenditure (combined federal and state funds) in the adult education and literacy system totaled \$374 per student, a meager investment compared to the nearly \$7,000 spent per student in the K–12 system (U.S. Department of Education 2001c) and roughly \$8,600 spent on instructional expenditures per student in public higher education (U.S. Department of Education 2003b). Most states rely on federal funds—which ranged from about \$800,000 to \$64 million per state in 2004 (U.S. Department of Education, 2004)—to support training, development, and evaluation activities. States with limited resources are often unable to commit adequate funding to the training and development of program instructors (Sabatini, Ginsburg, and Russell 2002) or the appropriate assessment and evaluation of learners in their programs (Mislevy and Knowles 2002).

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BENCHMARKS FOR ADULT LEARNING: SCHOLARSHIP AND RESEARCH

In K–12 education, the importance of attending to *how* children learn and develop in order to facilitate their educational process has, understandably, been

the focus of national attention for centuries. Yet, it was only in the 1920s—when adult education was recognized as a professional field—that academics and practitioners began systematically investigating questions about *how* adults learn. In fact early on, inquiries were guided by questions related to “whether or not adults *could* learn” (Merriam 2001a, 3). Since the late 1960s and early 1970s, however, greater attention through both research and dialogue has focused on developing a deeper understanding of adult learning and how to better support adults in their quest to learn and grow. In this section, we present key theories of adult learning as they emerged in the field from the 1970s through the first years of this century. Next, we discuss one central theory of adult development, constructive-developmental theory (Kegan 1982, 1994, 2000), and its distinguishing features from theories of adult learning. Table 19.1 presents a chronological listing of the various theories of adult learning and development that have influenced the field. Given the scope of this chapter, we will discuss only the main theories and their constructs. Check under authors’ names in this chapter’s reference list for additional resources for further discussion of these theories.

In discussing theories of adult learning and adult development our goal is to highlight how scholars construct the nature of change and to illuminate the key tenets of each major theory. We focus on the nature of change as described by various theories of adult learning and one theory of adult development to emphasize the key distinctions as to what is changing, according to each framework. While both types of theories are important and very useful in considering supports for adult learning, there is one key distinguishing factor that we would like to point out. The adult learning theories, for the most part, focus on changing habits of mind, perspectives or viewpoints that constitute what Mezirow (1991) calls a “frame of reference.” In contrast, constructive-developmental theory (Kegan 1982, 1994, 2000) focuses on the *process* by which changes take place in *how* a person knows—changes in a person’s underlying meaning system or frame of reference or epistemology. Constructive-developmental theory illuminates the process of development as an incremental one that occurs through a re-negotiation of the subject-object balance (we describe this later in the entry). These types of

changes, according to constructive-developmental theory (Kegan 1982), alter a person’s way of knowing—the very way a person takes in and understands his or her experiences. This theory helps us to design practices and shape contexts that support changes in an adult’s way of knowing.

A MOSAIC OF THEORIES OF ADULT LEARNING: THERE IS NO SINGLE THEORY OF ADULT LEARNING

To frame this section, we address the following characteristics of each theory, where appropriate: the key terms in each framework; the focus of change (i.e., what changes); the factors considered to contribute to or support those changes; and on whose experiences the theory has been developed. Table 19.2 on page 572 presents an overview of the theories of adult learning and their depictions of these characteristics.

Freire: Education as Liberation

In the 1970s Paulo Freire put forth his groundbreaking theory of education as a liberating process. His work centers on the idea that a person can change in critical ways when engaging in the learning process. Early on this theory was supported mainly by anecdotal and testimonial evidence. Freire (2000) argued that the “banking method” of education, with its emphasis on learning through passive listening, acquiring facts, and storing knowledge, is oppressive.

Freire believed that the main purpose of education is liberation, and that in order to truly engage in the process of education and to become an educated person, adult learners need to work with a contextualized curriculum—one that draws upon life issues that are relevant and meaningful to them. It is through this liberating process of education—one that invites adults to discuss and reflect on real life issues—that adults (initially impoverished, illiterate Brazilian rural workers) come to better understand how structures within society have oppressed them and how they can move beyond such structures, challenges, and obstacles by taking action to transform their worlds. One main principle of Freire’s (2000) work centers on the process of ‘*conscientização*’ or “conscientization” (p. 17),

Table 19.1

Chronological Listing of Theories of Adult Learning and Adult Development

1970s: Introduction of theories of emancipatory learning, andragogy, ego development, intellectual and ethical development, action science, and phasic approaches to adult development.

- (1970) Paulo Freire. Main tenet: A person can change in critical ways when engaging in learning relevant to one's life experiences and by having opportunities to dialogue and reflect on these. Supported early on by anecdotal and testimonial evidence. Argues that the "banking method" of education with its emphasis on passive listening and acquiring facts and knowledge (storing them) is oppressive. Major theory of adult learning.
- (1968, 1970, 1975, 1980, 1984, 1994) Malcolm Knowles. Andragogy and self-directed learning (in contrast to pedagogy). Focus of scholarly research and discussion in the 1970s and 1980s. Andragogical model of adult learning.
- (1970) Jane Loevinger, and Ruth Wessler. Introduction of theory for measuring ego development vis-à-vis a sentence completion test.
- (1970) William G. Perry. Theory of intellectual and ethical development based on studies of college-aged students.
- (1974, 1978) Chris Argyris and Donald Schön. Action science as a theory of learning for individuals and organizations. Illumination of theories-in-use and espoused theories and differences between Model I and Model II thinking. (Also discussed in Chris Argyris, R. Putnam, and D. M. Smith, 1985).
- (1978) Daniel Levinson, with Charlotte N. Darrow, Edward B. Klien, Maria H. Levinson, and Braxton McKee. Age as an organizer of experience. Highlights how men manage life tasks that arise in different phases.
- (1978) Lev S. Vygotsky. Zone of proximal development as a support to facilitating and scaffolding learning.

1980s: Introduction of cognitive skills based adult development, characteristics of adult learners, mentoring relationships as supports to adult learning, dialogical processes and their influence on adult development, critical thinking as a support to adult learning, and constructive-developmental theory.

- (1980) Kurt Fischer. Introduction of a theory of cognitive skill development in connection to adult learning.
- (1981) Patricia Cross. Characteristics that influence adult learning: *personal characteristics* (e.g., aging, life phases, developmental stages); *situational characteristics* (e.g., part-time versus full-time learning; voluntary versus compulsory learning).
- (1983, 1986, 1999) Laurent Parks Daloz. Attention to teachers and their role as mentors in order to support adult learning and adult development (a constructive-developmental approach).
- (1984) Michael Basseches. Importance of the relationship between dialectical thinking and supporting adult development.
- (1987) Stephen Brookfield. Attention to the role of critical reflection in supporting adult learning. Attention to the role of context in facilitating or hindering adult learning.
- (1982, 1994, 2000) Robert Kegan. Introduction of constructive-developmental theory (a Neo-Piagetian theory of development across the lifespan). Growth is defined as a gradual process and re-negotiation of the "subject-object" balance. This theory delineates six full stages of development across the lifespan (i.e., meaning making systems) and four transitional stages in between each of them.

1980s: New stream of scholarship and research: Introduction of women's development theories—focusing on women's distinctive characteristics as learners.

- (1982) Carol Gilligan. Introduction of a theory of women's development.
- (1986) Jean Baker Miller. Further articulation of a new psychology of women.
- (1986) Mary F. Belenky, Blythe McVicker Clinchy, Nancy Rule Goldberger, and Jill Mattuck Tarule. Introduction of a theory about women's ways of knowing, with a focus on the development of self, voice, and mind.
- (1996) Daniel Levinson, and Judy Levinson. Attention to the phases or life tasks common to women's lives.

1990s: Boys' and men's development: Theories illuminating boys' and men's development in present societal context.

- (1996) Michael Gurian. Discussion of the importance of parents, mentors, and educators in the development of boys.
- (1998, 2000) William Pollack. Discussions about the importance of illuminating boy's true voices and the importance of examining and rescuing males from the myths of boyhood.
- (1999) Michael Gurian. Research focused on the moral development of boys and young men.
- (1999) Dan Kindlon, and Michael Thompson. Discussion related to the importance of protecting the emotional life of boys.

Continued

Table 19.1 (continued)

- (1999) Eli Newberger. Work focusing on the nature of male character and how to nurture it.
- (2001) Michael Gurian, Patrick Henley, and Terry Trueman. Research illuminating the ways in which boys and girls learn differently. Focused attention on implications of this for teachers and parents.

1990s: Focus shifts to transformative learning. Self-directed learning remains prominent in discussions, though not as much research was oriented toward this area from the 1990s to current day. Attention to women's development was still prominent.

- (1990, 1991, 1994, 1996, 2000) Jack Mezirow. Transformational learning Theory. A major theory of adult learning. Decade of 1990s is reported to be "The Transformational Learning Decade." Mezirow's theory was the focus of much research and scholarly discussion from the 1990's–present. Self-directed learning was still prominent and called attention to informal learning.
- (1990) Victoria J. Marsick, and Karen Watkins. Focuses on informal and incidental learning in the workplace (i.e., when people have the need, motivation, and opportunity to learn—learning can take place). Learning can be unexpected, not highly conscious; and connected to the learning of other people (emphasis on the role of context).
- (1990) Barbara Rogoff. Focused attention to the importance of social context in supporting cognitive development, the zone of proximal development, and scaffolding learners in order to support learning.
- (1991) Gerald Grow. Discussion of how to teach adults to be self-directed learners, and the importance of being self-directed as an adult.
- (1991) Judith V. Jordan, Alexandria G. Kaplan, Jean B. Miller, Irene P. Stiver, and Janet L. Surrey, eds. Continued attention to women's growth through the context of interpersonal relationships.
- (1992) John M. Dirx, and Maryanne E. Spurgin. Attention to the role of teacher beliefs in supporting adult learning. Implicit theories of adult basic education teachers: how their beliefs shape classroom practice.
- (1993) Rosemary Caffarella, and Sandra Olson. Attention to reviewing the literature and theories relating to the psychosocial development of women.
- (1994) Patricia Cranton. The importance of understanding transformational learning and of helping adult educators to promote transformational learning in the context of professional development.
- (1994) Patricia King and Karen Kitchener. Enhanced attention to the role of reflective judgment in adult learning.
- (1994) Robert Kegan. Introduction of the argument that the demands of modern adult life outpace the capacities of most adults.
- (1995) Stephen Brookfield. Attention to the role of educators in building contexts that support adult learning and critical reflection. The important role of examining assumptions in order to support adult learning.
- (1997) John M. Dirx. Focus on the role of emotions and imagination as key processes in supporting adult learning. Imaginable method is introduced as an alternative to reflective processes of making meaning. Discussion of the importance of nurturing the soul in supporting adult learning.
- (1998) M. Cecil Smith and T. Pourchot. Discussion of adult educational psychology in light of theories of adult learning, skill development, and adult development.
- (1999) Sharan Merriam, and Rosemary Caffarella. A comprehensive review of how the field conceptualizes learning in adulthood.

1990s: Stream of research and scholarship directed toward understanding the potential of group and organizational learning.

- (1994) P. Senge, A. Kleiner, Charlotte Roberts, Richard B. Ross, and Brayn J. Smith. Introduction of the *Ladder of Inference* and strategies for building a learning-oriented organization.
- (1994, 1996) Patricia Cranton. Introduction of ideas related to how educators can promote transformative learning (1994); Professional development as a means for transformative learning (1996).

2000s: Bringing together of theories of adult learning and adult development, focusing more deeply on the importance of context in supporting adult learning and development, and increased attention to the role of adult educators in supporting adult learning and development.

- (2000) Jack Mezirow and Associates. Scholars join together to build upon connections and differences between various theories of transformative learning and constructive-developmental theory.
- (2000) Lyle Yorks, and Victoria Marsick. Focus on transformative learning in organizations.
- (2000) Ethan Will Taylor, and Kathleen Taylor (2000a). Critical literature review of the ways in which Mezirow's theory has been expanded (E.W. Taylor) Importance of interpersonal relationships as supports to adults' transformational learning (Taylor). Focused attention on how teaching, context and culture can support transformational learning.
- (2000) Kathleen Taylor, Catherine Marienau, and Morris Fiddler. Enhanced attention to the ways in which teachers can support adult learning. See also Brookfield (1995). To support adult learning, educators need to teach with developmental intentions. This, in Kathleen Taylor's (2000) view holds the potential to promote "transformative outcomes, meaning that learners will not only know *more* but know *differently*" (p. 153).

meaning raising consciousness in order to help learners understand the world differently so that they can re-conceptualize their own position in it. With an empowered stance and a new outlook, Freire believed that adults could then be in a better and stronger position to transform or change their world.

Knowles: Andragogy and Self-Directed Learning (in Contrast to Pedagogy)

One of the central foci of scholarly research and discussion in the 1970s and 1980s was Malcolm Knowles' (1968, 1970, 1975, 1980) seminal theory of "andragogy," which centered on supporting adults' learning, in contrast to pedagogy, which focused on supporting children's learning.

According to Knowles (1984), four characteristics need to be considered when supporting adult learning:

1. Adults must understand *why* they need to learn something.
2. Adults need to learn *experientially*.
3. Adults approach learning as *problem solving*.
4. Adults learn best when the topic is of immediate *value*.

Five assumptions underlie Knowles's (1984) model. They are as follows:

1. Adults tend to be self-directing in their learning.
2. Adults come to their learning experiences with rich life experiences from which to draw upon. These experiences can serve as resources for learning.
3. Adults' learning needs to align with the demands of their social roles (e.g., the role of parent, worker, and citizen).
4. Since adults' readiness to learn is frequently influenced by their need to know or do something, they tend to have a life-, task-, or problem-centered posture toward learning in contrast to a subject matter or disciplinary orientation.
5. Adults are generally motivated to learn because of intrinsic or internal factors (such as helping their children with homework) as opposed to external factors (e.g., a raise in salary or a promotion).

Knowles' theory, which was developed from working with adults in educational settings, asserts that adults learn best when learning is self-directed and when they have a need to know.

Levinson: Age/Phasic Theory—Life Tasks

Daniel Levinson (Levinson et al. 1978; Levinson and Levinson 1996) developed a theory that differentiates the complex life tasks that adults negotiate at different ages or phases in their lives. His 1978 theory focused on men's life tasks, and his 1996 theory, developed in collaboration with his wife, Judy Levinson, focused on women's life tasks. According to these theories, the physical, psychological, social, and emotional changes that men and women experience at particular life phases are related to age, and follow a predictable and generally consistent sequence. Levinson's theories illuminate how adults develop during different phases of their lives in response to managing various life tasks that are encountered during distinct phases of their lives.

These theories were developed for the most part from studies of middle-class, white, college-educated men and women, and outline the physical, psychological, social, and emotional changes that adults generally experience, and highlight how, in most cases, these correspond with age.

Cross: Characteristics of Adult Learners

During the early 1980s, another focus of scholarly research and discussion emerged when Patricia Cross (1981) introduced the importance of considering the characteristics of adult learners when supporting their learning and growth. As educators, Cross (1981) maintained that we must attend to adults' personal characteristics: aging, life phases, developmental stages, situational characteristics (part-time versus full-time learning) and voluntary versus compulsory learning when conceptualizing how to support learning.

Her theory, primarily developed from working with adults in higher educational settings and professional development, sheds light on the importance of understanding the personal and situational characteristics adults bring to their learning experiences and how these factors contribute to and influence learning.

Table 19.2

Overview of Adult Learning Theories and Their Essential Characteristics

Theorist	Prominent Adult Learning Theories						
	Paolo Freire	Malcolm Knowles	Daniel Levinson	K. Patricia Cross	Laurent Daloz	Stephen Brookfield	Jack Mezirow
<i>Key terms specific to theory</i>	Conscientização	Andragogy; self-directed learning	Life tasks	Characteristics of adult learners	Mentoring relationships as "holding environments"	Reflective practice and critical teaching	Transformational "frames of reference"; "learning structures"
<i>Focus of change, i.e., what changes?</i>	An adult's consciousness	Skills and knowledge	Physical, psychological, social, and emotional growth	Changes in adult learning	Growth of individual	Changes in adult learning, changes in teachers' reflective capacities and critical teaching	Changes in behavior and perspective
<i>What factors are described as contributing to or supporting change?</i>	Contextualized curricula	Learner readiness; need to know	Age	Personal and situational characteristics	Mentoring, bridges	Opportunities for reflective practice	Opportunities for reflecting on experiences and problem solving; disorienting dilemma
<i>On whose experience has the theory been largely developed?</i>	Socio-politically marginalized groups in Brazil	Adults in traditional and nontraditional educational settings	Middle-class, white, college educated men and women	Traditional college-age learners	Adults in nontraditional educational settings, including professional training	Adults in traditional and nontraditional educational settings, including professional training and professional development	Adults in traditional and nontraditional educational settings, including professional training

Daloz : Mentoring as a Support to Learning

In the early 1980s, Laurent Parks Daloz put forth his theory of mentoring as a mechanism for supporting adult learning and development. His theoretical model emphasizes the important role that teachers can play as mentors in support of adult learning and development.

Daloz applies Robert Kegan's constructive-developmental theory (1982, 1994), will be discussed later in this chapter, to mentoring and suggests that the relationship between mentor and mentee can provide a "holding environment" for supporting adult learning and growth. Daloz (2000) maintains that a mentor can serve as a bridge for supporting growth. In other words, as a bridge, a mentor can support a mentee—by recognizing and attending to her or his present developmental level—and by providing the necessary challenges and continuity for development (Daloz 2000; Kegan 1994). Support, as Daloz (1986) explains, is "the activity of holding, of providing a place where [a person] can contact her need for fundamental trust, the basis of growth" (p. 215). Mentors can provide trust by attending carefully to mentees' meaning making, expressing positive expectations, advocating for the mentee, and creating a safe context for growth (Daloz 1983, 1999).

Daloz (1983, 1986, 1999) contends that an essential way of attending to the diverse needs of adult learners is through the mentoring relationships, wherein adults can benefit from both a mentor's intentional supports and challenges in order to learn from and adapt to the changing circumstances of life transitions. Daloz (1986) maintains that "holding environments" (Kegan, 1982, 1994), contexts in and out of which a person grows, can be shaped to facilitate learning and growth when they consist of a delicate and needed balance of developmentally appropriate supports and challenges (we discuss "holding environments" later in this chapter). Daloz, citing Kegan (1982), asserts that *both* support and challenge are essential for supporting learning and growth. Environments that are excessively supportive without enough challenge can be inadequately stimulating. In contrast, environments that are overly challenging can feel threatening and lead to withdrawal.

Daloz discusses how teachers-as-mentors (in educational and professional settings) can support adult learning and create a safe environment in which

adults are encouraged to take risks in their learning. In addition, Daloz (1986) emphasizes the importance of open and honest communication between mentors and adult learners. According to Daloz, a mentor's self-disclosure can empower adult learners. He advocates that educators use open dialogue as a tool to support adults as they grow from learning from multiple perspectives and alternative ways of understanding their experiences. To best support adult learning, Daloz urges educators to cultivate environments of mutual respect.

Brookfield: The Role of Critical Reflection in Teaching and Supporting Learning

In the late 1980s, Stephen Brookfield (1987) introduced the necessity of critical reflection for teachers and adult learners as well as the importance of attending to the context of learning. His theory was developed from working with adults and teachers in traditional and nontraditional settings. Brookfield advocates that engaging in reflection, and reflective practice, is a necessary support for teachers—in terms of enhancing their own growth and their capacities to facilitate adult learning—and for adult learners, more generally. For teachers, the central goal of reflective practice is improving one's teaching—which includes attending to the emotional and intellectual health and growth of the teacher (Brookfield 1995; Osterman and Kottkamp 1993; Schön 1983). When adults engage in reflective practice, they become aware of their own and others' assumptions and behaviors. "In many ways," Brookfield (1995) writes, "*we are* our assumptions. Assumptions give meaning and purpose to who we are and what we do" (p. 2).

Engaging in reflective practice, Brookfield (1995) explains, supports adult learning because it provides a space for examining and modifying assumptions. However, identifying problems is a challenging task, because the assumptions informing and directing behavior are not easy to articulate. Once a problem is acknowledged, adults can gather information (data) about it from various sources and envision solutions by "stepping outside the action to observe it critically and to describe it fully" (Osterman and Kottkamp 1993, 24). This description should incorporate both cognitive and affective aspects of behavior.

Brookfield (1987) also maintains that teachers will

benefit from engaging in critical teaching. In other words, to support adult learning, teachers must be “catalysts of discussion and inquiry, sometimes as contributory group members. We perform such diverse roles as being advocates for missing perspectives, adversaries to propaganda, recorders of sessions, mediators of divisive tendencies, and resource persons” (Brookfield 1987, 80). Similar to the teaching principles put forth by Freire (1986, 1992), and Jack Mezirow (1990), Brookfield (1987) notes that teachers who engage in critical teaching have a willingness and a developed capacity to act in these types of roles as they support adult learning.

In addition, Brookfield (1987), like Cranton (1994) and Daloz (1986), emphasizes the importance of creating contexts in which adult learners have ongoing opportunities to make the assumptions underlying their ideas and actions explicit. Both Brookfield (1987) and Daloz (1986) assert that adult learning is supported when adults are encouraged to examine their assumptions and to envision alternative ways of thinking and acting. Brookfield urges educators to create situations where adults are invited to experiment with adopting a new perspective, one that differs from their own, by engaging in role playing. Doing so supports learning.

Like Cranton (1994) and Freire (1986, 1992), Brookfield describes how reflection on assumptions is an important aspect of adult learning that can create a shift in perspective, a change in consciousness, or a transformation of mind.

INTRODUCTION OF WOMEN’S DEVELOPMENT THEORIES: 1980S

In the 1980s several theories emerged that focused specifically on women’s distinctive characteristics as learners. Earlier theories were developed for the most part, based on men’s experiences and later applied to women’s experiences. Women’s increased educational access and educational accomplishments have helped to strengthen ideas (Hayes 2001). Models of women’s development shed light on the importance of relational knowing and interpersonal connection in supporting growth and change (Belenky et al. 1986; Fiddler and Marienau 1995; Gilligan 1982; Miller 1986; Taylor, Marienau, and Fiddler 2000).

For example, Carol Gilligan (1982) asserts that

an ethic of care and concern for relationships with important others are essential characteristics for women and that these must be considered when supporting women’s development and learning. Similarly, Mary Field Belenky, Blythe McVicker Clinchy, Nancy Rule Goldberger, and Jill Mattuck Tarule (1986) highlight the need to build a collaborative model, which they refer to as “connected teaching,” to support women’s development and learning. These scholars urge educators to attend to the relational aspects of the learning process when supporting women’s development (Belenky et al. 1986; Caffarella and Olson 1993; Fiddler and Marienau 1995; Gilligan 1982; Goldberger, Tarule, Clinchy, and Belenky 1996; Jordan, Kaplan, Miller, Stiver, and Surrey 1991; Levinson and Levinson 1996; Miller 1986).

More recently, scholars and researchers have re-focused efforts to examine boys and men’s development. In particular, this work has investigated boy and men’s development in our contemporary society, emotional intelligence, and the education of boys and men (Gurian 1996, 1999; Gurian, Henley, and Trueman 2001; Kindlon and Thompson 1999; Newberger 1999; Pollack 1998, 2000).

TRANSFORMATIVE LEARNING THEORIES

During the 1990s the focus of scholarly conversation and research shifted to transformative learning. Self-directed learning remained an important area, though less research has centered on it from the 1990s to current day (Merriam 2001b). Scholarly attention to women’s and men’s development were still prominent.

A major theory of adult learning that emerged in the 1990s was Jack Mezirow’s (1991, 2000) Transformational Learning Theory. This theory was developed from studies of people in adult education. The decade of the 1990s has become known as “the transformational learning decade” because this theory moved to the foreground and took center stage (Merriam 2001b). Mezirow’s theory of adult learning has been the focus of research and scholarly conversation from the 1990’s to the present. Other transformative learning scholars who have made important contributions to this field are listed in Table 19.1.

According to Mezirow's theory, learning to make meaning is a process that focuses on and is shaped and delimited by our frame of reference, which is a "meaning perspective"—the results of how we interpret experience. Meaning structures are two-dimensional. One component is *a habit of mind*, which are broad sets of predispositions resulting from psychocultural assumptions that shape and determine our expectations and how we interpret the meaning of experience. The second component, which is the expression of *a habit of mind*, is a *point of view*. It is comprised of "clusters of meaning schemes" or "sets of immediate and specific expectations, beliefs, feelings, attitudes, and judgments—that tacitly direct and shape a specific interpretation and determine how we judge, typify objects, and attribute causality" (Mezirow 2000, 18). According to Mezirow, "We resist learning anything that does not comfortably fit our meaning structures, but we have a strong, urgent need to understand the meaning of our experience" (1994, 223). Meaning structures are transformed through reflection (defined by Mezirow as "attending to the grounds [justification of one's beliefs]") (1994, 223). Reflection takes place in the context of problem solving (i.e., reflecting on the content of the problem, the process of problem solving, or the premise of the problem). Disorienting dilemmas, single, dramatic events, serve as triggers for reflection.

According to Mezirow (2000, p. 19), there are four ways to learn:

1. By elaborating existing *frames of reference*
2. By learning new *frames of reference*
3. By transforming *points of view*
4. By transforming *habits of mind*

The most significant learning, Mezirow asserts, involves critical reflection about oneself (1991, 2000). Mezirow suggests that examples of this may include: a disorienting dilemma (e.g., unemployment); self-examination of guilt feelings; intentional assessment of assumptions; exploration of new roles; developing a course of action; and/or building competence and increasing self-confidence. Many life-cycle changes can be experienced as fundamental changes in our worldview, but in reality, Mezirow suggests, they fit into normative life patterns. According to Mezirow (2000), "Transformational learning has both

individual and social dimensions and implications. It demands that we be aware of how we come to our knowledge and as aware as we can be about the values that lead to our perspectives" (p. 8).

More recently, E. W. Taylor (1997, 1998, 2000a, 2000b) conducted a critical review of research associated with Mezirow's theory and discovered several ways in which the theory has been expanded. Crucial changes, according to Taylor, are mentioned below.

1. Transformational learning, which was initially considered to be a linear process, has been found to be a recursive process (Taylor, 2000b). Also, particular aspects of the process, for example the need to identify, express, and work through feelings (affective components), "seem to be more significant to change" than other aspects (Taylor 2000b, 292). Focusing on *both* thoughts and feelings are essential to the process of transformational learning.
2. Rather than conceptualizing a "disorienting dilemma" as being a single event, Lisa Baumgartner (2001) cites E.W. Taylor's work (2000b, 300) and states that the "disorienting dilemma" can be a "long cumulative process."
3. In all of the studies Taylor (2000b) reviewed, a central finding emerged about the critical role that relationships play in the transformational learning process (Baumgartner 2001, 307). As Baumgartner (2001) notes in referencing Taylor's (2000b) finding, "transformational learning is not an independent act but is an interdependent relationship built on trust" (p. 19).
4. Context and culture have emerged as important factors to consider when supporting the transformational learning process (Taylor; 2000b, Clark 1991).

Table 19.1 depicts a chronology of scholarly work that has focused on transformative learning. We highlight the evolution of transformative learning theorists' work briefly below.

(1990) Victoria J. Marsick, and Karen E. Watkins. Focuses on informal and incidental learning (i.e.,

wherever people have the need, motivation, and opportunity to learn—learning can take place). Learning can be unplanned and unexpected, not highly conscious, and connected to the learning of other people (emphasis on the role of context). (See also Kasl and Elias 2000.)

(1990) Barbara Rogoff. Focuses on the importance of considering the social context, the zone of proximal development, and on scaffolding learners when supporting learning. This work builds on Lev Vygotsky's (1978) theory of the *zone of proximal development*.

(1992) John M. Dirkx and Maryann E. Spurgin. Focuses attention on the role of teacher beliefs in relation to supporting adult learning. Illuminated how teachers' implicit theories and beliefs about adult basic education shape their classroom practices.

(1994, 1996, 2000) Patricia Cranton. Focuses on helping educators support adults' transformative learning, with particular attention to professional development as an important opportunity for attending to transformative learning.

(1994) Patricia King and Karen M. Kitchener. Enhanced attention to the role of reflective judgment and the development of critical thinking skills in supporting adult learning.

(1994) Robert Kegan. Introduces the argument that the demands of modern adult life often outpace the developmental capacities of most adults.

(1997) John M. Dirkx. Focuses on the role of emotions and imagination in meaningful adult learning. Offered the imaginal method as an alternative to reflective processes of making meaning.

(1995) Stephen Brookfield. Focuses on supporting critical reflection among educators and the need for shaping contexts supportive of adult learning and critical reflection. Emphasizes the importance of examining assumptions in order to support adult learning. (See also Schön 1983.)

(1999) Sharon B. Merriam, and Rosemary S. Caffarella. Research into how to better support learning in adulthood.

Taylor: The Importance of Teaching with Developmental Intentions

Most recently, Kathleen Taylor (2000) has emphasized the importance of supporting teachers in their efforts to teach with developmental intentions. Teaching in this way means not only helping adults to learn information, knowledge, and skills (informational learning, Kegan 2000), but also means teaching with a deliberate focus on supporting learners as they develop more complex ways of knowing or meaning making systems (transformational learning, Kegan 2000). This, in Taylor's (2000) view holds the potential to promote "transformative outcomes, meaning that learners will not only know *more* but know *differently*" (p. 153). She argues that focused attention to supporting adult development will benefit individuals and our society as a whole. She explains,

Adults who develop—that is, whose meaning-constructive systems transform—are likely to become more deliberative, responsible, and competent in carrying out the work of society. . . . They are better able to recognize the need for more just, humane, and equitable economic and social structures and to work toward achieving those goals. (Taylor 2000, 167)

Taylor employs Mezirow's (1990, 1994, 1996) theory and constructive-developmental theory (Kegan 1982, 1994, 2000) to shed light on how we can teach adults with developmental intentions. Bringing together and contrasting key principles of these theories, she (2000) discusses the implications of this for teachers and their students.

Taylor (2000), Kegan (1994), and Daloz (1999) use the metaphor of a bridge to describe how to support adult learning and development. The bridge must be well anchored on both sides in order to provide support. "Such a bridge fulfills the essential requirement, if transformation is the intended outcome, of meeting learners where they are and then guiding and accompanying them on the journey of change (Kegan 1994; Daloz 1999)" (Taylor 2000, 156).

CONSTRUCTIVE-DEVELOPMENTAL THEORY

Constructive-developmental theories of adult growth and development stem from a thirty-year tradition

that examines how adults make sense of their internal and external experiences (Basseches 1984; Belenky et al. 1986; Gilligan 1982; Kegan 1982, 1994, 2000; King and Kitchener 1994; Piaget 1952). Constructive-developmental theory (Belenky et al. 1986; Baxter Magolda 1992; Kegan 1982, 1994, 2000) and the theories of adult learning discussed above offer tools for understanding how to support adult learning and development in ways that can inform the teaching and learning enterprise.

Here, we focus on Robert Kegan's constructive-developmental theory (1982, 1994, 2000) for several reasons. First, it illuminates how a person is an active meaning maker of experience. While other frameworks discuss this, it is central in constructive-developmental theory. As Kegan (1982) puts it, "The activity of making-meaning is the fundamental motion of personality" (p. 15). Second, this theory offers hopeful principles about how to support adult growth (i.e., changes in structure of thinking) so that we can better manage the complexities of twenty-first-century life. Last, it emphasizes that development is *not* the same thing as intelligence and attends to a broad range of aspects of the self (i.e., emotional, cognitive, intrapersonal, and interpersonal lines of development). This theory centers on transformational learning, that is, changes in *how* a person knows, rather than in *what* a person knows.

A person's meaning system—through which all experience is filtered and understood—is referred to as a meaning making system, a way of knowing (Kegan et al. 2001), a developmental level, an order of consciousness, or a stage (Kegan 1994). We use meaning making, meaning systems, order of consciousness, and ways of knowing interchangeably to describe how individuals actively make sense of their experiences. Similar to supporting a child's growth, when considering how to support adult growth we need to shape "holding environments" that provide developmentally appropriate supports *and* challenges to adults who make sense of their experiences with qualitatively different ways of knowing (Kegan 1982, 1994).

Kegan (2000) points to the importance of identifying what is changing as we work to support learning and development. While informational learning (i.e., increases in knowledge and skills) is important, it is not sufficient in terms of supporting growth. Informational learning can, of course, lead to important changes in adults' attitudes and possibly their competencies. How-

ever, reflective learning leads to changes in perspectives. Transformational learning, as defined by Kegan (2000), leads to a transformation of mind—a developmental shift in *how* one knows and understands the world. In other words, transformational learning is learning that helps adults to develop more complex meaning systems (cognitive capacities) that enable them to better manage the complexities of work and life (Drago-Severson 2001, 2004a, 2004b; Kegan 1982, 1994, 2000). Kegan (1994) argues that the demands of modern life oftentimes outpace the capacities of adults. In other words, what is expected of adults in the twenty-first century, in terms of our capacities to perform in our roles as parents, workers, and citizens, often are beyond our developmental capacities.

There is an intimate connection between transformational learning and self-examination (Brookfield 1987, 1995; Cranton 1994, 1996; Mezirow 1991, 1994, 1996, 2000). Increases in developmental capacity broaden adults' perspectives on both themselves and others (Kegan 1982, 1994). For this type of change to occur, attention needs to be devoted to both the context and to how an adult is interpreting his or her experience so that the context can provide both supports and challenges that are developmentally appropriate (Drago-Severson 2004a; 2004b; Kegan 2000). In transformational learning, adults undergo a *development* and profound change in the very way they construct or make sense of experience. This kind of change, a change in one's mental structure or way of knowing, is at the heart of Kegan's constructive-developmental theory.

Central Principles

This theory is based on two central tenets. First, that people actively construct their experiences (constructivism) and second, that people's ways of knowing can change or develop over time (developmentalism). A person's meaning-making system shapes how *all* experiences will be taken in and understood. In other words, a person constructs meaning with the *same* way of knowing across different domains of life (e.g., as worker, parent, and partner), except under extraordinarily rare circumstances (see Kegan 1994). Understanding a person's way of knowing and that it can change over time can help us better understand adults' needs and therefore support their learning and growth.

Another principle is that growth and development are lifelong processes. Development is an interactive process between the person and the environment (Kegan 1982). Growth, according to Kegan's theory (1982, 1994), is a process of increasing differentiation and internalization; as humans, we are involved in a process of growth in which we are constantly (and gradually) renegotiating what is *self* and what constitutes *other* (Drago-Severson 2004b; Kegan 1982). Development involves a qualitative change in the ways in which a person constructs his or her experience—rather than an acquisition of more skills and knowledge. Crucial to growth, according to this theory, are both the structure and the process of meaning making.

A meaning making system is composed of what Kegan (1982) refers to as the relationship or balance between the “subject” and the “object” of a person's way of knowing. Meaning making is an activity by which the self emerges from being embedded in, “subject to” (Kegan 1982), and identified with a culture (e.g., its needs, its interpersonal mutuality, or its own authorship and ideology). As the self emerges, it is able to take the previous culture it was identified with (or subject to) as object and reflect on it. We cannot take a perspective on what we are “subject to” because we are embedded in it. It is not separate from our selves. In contrast, that which a person can take as “object” can be organized, reflected upon, and managed by the self. What a person can take as object are aspects of experience that a person can look at, be responsible for, and take control of. A person's way of knowing dictates how experiences will be taken in, managed, handled, used, and understood. For example, a way of knowing shapes how a person understands his or her role and responsibilities as a teacher, learner, or employee.

Kegan's Ways of Knowing

Up until 1994, this theory was employed for the most part to understand college-educated people's experiences. In Kegan et al.'s 2001 study this framework was employed to understand adult learners' experiences in ABE/ESOL settings. The ways in which adults understand their experiences of the teacher-learner relationship, as presented in Table 19.3, are drawn from Kegan et al.'s 2001 research.

Kegan's constructive-developmental theory consists of six qualitatively different systems of meaning mak-

ing, or ways of making sense of reality. The first two of six systems describe the meaning making of infants and young children and the last describes a mostly theoretical system that is not often found in any population and, if present, has not been detected before midlife (Kegan 1994). Because of this, we describe the three qualitatively different ways of knowing that are most common in adults as the instrumental, the socializing, and the self-authoring way of knowing. Table 19.3 presents the characteristics of how adults with the three most prevalent ways of knowing in adulthood make sense of their expectations for their teachers. It is important to note that there are also four transition stages between each of them (for a full discussion of this, please see Lahey et al. 1988). Moving from one way of knowing to another is a progression of increasing complexity in an individual's developmental capacities.

Table 19.3 illustrates how learners with different underlying meaning systems understand the teacher-learner relationship. As shown, instrumental knowers want teachers to provide clear explanations and step-by-step procedures in order to make them learn. They assess their learning in terms of their ability to demonstrate expected behaviors and by the grades they receive from teachers. When learning, they focus on their own concrete needs and feel supported when teachers give them information. They also feel supported by teachers' efforts to provide extra assistance when they need it in order to get what they need to learn.

Like instrumental knowers, learners who make sense of their experience with the instrumental/socializing way of knowing feel supported in their learning when teachers explain concepts well so that they are able to understand. Unlike instrumental knowers, these learners expect teachers to be good role models. These knowers see their teachers and their peers as sources of support. They want teachers to value them and their ideas and feel most supported by teachers who really “care” about them.

Socializing knowers are not only interested in fulfilling teachers' expectations of them but also identify with these expectations. In other words, they understand the teachers' goals for their learning as their own goals. They view the teacher as the source of authority; however, what is most important to them is that teachers take an interest in them as individuals. This kind of genuine care and concern from teachers facilitates their learning. Socializing knowers

Table 19.3

Learners' Constructions of the Teacher-Learner Relationship

Way of Knowing	Learner Expectations for a Good Teacher	Sample Quotations
Instrumental Knowers	Good teachers show me how to learn and give me their knowledge and the rules that I need to follow to get the right answers. I know that I've learned something because I can do it (demonstrate a behavior) and because I get a good grade (a consequence).	Good teachers "give you that little push." They "make me learn." Good teachers "explain how do to it, ask you write it down, and you write down exactly how to do it. Then we'd do it."
Instrumental/ Socializing Knowers	Good teachers help me to learn by showing me how to do things; they make me learn. Good teachers have rules that I need to follow so I can do things the right way. They explain things and help me understand. Good teachers give me their knowledge; they tell me what I <i>should</i> know. I know I have learned something because I can do it (demonstrate a behavior) and because the teacher tells me so.	Good teachers "teach me all the time." They show me "the correct way to speak so that others will listen." Good teachers say "I have to do it this way because if I don't it's no good." They "make me do writing, speaking, . . . she's good. She's always there." They "make you understand, like if I don't know something, I ask her, 'Can you repeat it?' Then she explains again. She's good."
Socializing Knowers	Good teachers care about me. They explain things to help me understand. Good teachers really listen (they support me). They know what is good for me to know, and they tell me what I <i>should</i> know. Good teachers are kind, patient and encouraging. I can feel, inside, when I've learned something and the teacher acknowledges me in that.	"If you don't have a good teacher, you're not going to be self-confident." "If [the teacher] doesn't teach you the way you learn good, that doesn't help you." "I ask the teacher to explain to me how I'm going to do it."
Socializing/Self- Authoring Knowers	Good teachers explain things well and help us understand. They care about students as people. Good teachers understand my background and that helps me when I'm learning. They listen really well and are knowledgeable. They know what I need to learn, and I know what I want to learn. I have knowledge inside me. Good teachers are polite, and patient; they help me with the things I need to know to pursue my interests and learn what I need to learn make goals. They listen to my feedback and comments so that they can improve their teaching.	"I like a soft person . . . who considers when you are asking a question, they answer you, they don't ignore you. That's the kind of person I like to be a good teacher. So they really understand people. They care for their students." Good teachers "keep explaining things in different ways, they show you different ways to learn. I like that technique." I can ask a good teacher "for help with what I know I do and do not understand, but I don't think I can tell a teacher what to do. Because I'm only a student." "I think it's very tough for a teacher to teach and listen and explain all the time." Good teachers "do their jobs and help me to do better, I'm proud of that."
Self-Authoring Knowers	Good teachers are one source of knowledge, and my classmates and I are another. I offer feedback to teachers to help them improve their practices. Good teachers use a variety of teaching strategies in their practice. They help me to meet my own internally generated goals. I <i>know</i> when I have learned something and when I have, I can then think of different ways to teach what I know to others.	Good teachers "understand their students." "No matter how good a teacher you have, if you don't really want to learn, you're not going to learn nothing." Good teachers "make learning interesting. It has to be interesting to the student." "What you do with knowledge after it's given to you is of your own choosing."

Source: E. Drago-Severson. "We're Trying to Get Ahead: A Developmental View of Changes in Polaroid Learners' Conceptions of Their motivations for Learning, Expectations of Their Teachers, and Relationship to Work." In *Toward a "New Pluralism" in the ABE/ESOL Classroom: Teaching to Multiple "Cultures of Mind,"* ed. R. Kegan, M. Broderick, E. Drago-Severson, D. Helsing, N. Popp, and K. Portnow, 477-614. NCSALL Research Monograph #19. Boston: World Education, 2001.

expect the teacher to know what they need to learn. Although they can feel (internally) when they have learned something, they need the teacher's acknowledgment to solidify, or complete, that feeling. In this way of knowing, having good relationships with teachers facilitates learning.

Learners with a self-authoring way of knowing not only see their teachers as authorities and sources of knowledge but also see themselves and one another as knowledge generators. Unlike socializing knowers, they are able to reflect on their teachers' pedagogy and offer constructive feedback for improving it. Like socializing knowers, they voice appreciation for teachers who employ a variety of teaching techniques to meet learners' needs. Unlike learners with other underlying meaning systems, they are concerned with meeting their own goals and internally generated standards on behalf of what they understand to be their larger learning purposes. Good teachers, in their view, support them in meeting their own goals. These learners do not look to meet teachers' expectations for their learning but rather look inwardly and strive to meet their own expectations. Additionally, they have the capacity to take greater responsibility for their learning (Drago-Severson 2004b).

Kegan's theory centers on illuminating the qualitatively different meaning making systems adults have and how these systems can change over time, provided that developmentally appropriate supports and challenges are available. As shown in Table 19.3, this theory helps us to understand how adults, depending on their way of knowing, have different views of their teachers and different psychological relationships with the "teacher as authority figure."

In Kegan's theory, the focus of change is the structure of a person's meaning-making system. To support development of the mind, we must shape "holding environments" that offer developmentally appropriate supports and challenges.

SUMMARY

We have discussed the basic tenets of theories of adult learning and adult development. In so doing, we have highlighted how various theories construct the nature of change and emphasized key distinctions as to what is changing, according to each framework. As illustrated, the adult learning theories, for the most part, focus on facilitating changes in a person's per-

spective and oftentimes their behaviors. We have also discussed constructive-developmental theory (Kegan 1982, 1994, 2000), which illuminates the process of the change (a re-balancing of the *form of knowing*) that can take place in *how* a person knows. This theory helps us to understand changes in the structure of a person's underlying meaning system—changes in the very way a person takes in and understands his or her experiences.

BRIDGING THEORY AND PRACTICE IN ADULT BASIC EDUCATION

As shown in the preceding paragraphs, theorists in adult learning and adult development have provided the adult education field with a rich legacy and, perhaps more importantly, a vision of what change in adult learning can look like. For our purposes in this chapter, an important caveat is the fact that these theories (with a few exceptions) were developed with a different adult learning population in mind than the targeted population served by the adult basic education system. These differences can be characterized along socioeconomic lines, educational backgrounds, learning goals, language backgrounds, and countries of origin. As highlighted in Table 19.2, several of the most prominent adult learning and developmental theories were based upon the experiences of white, middle-class, highly educated adults who were born in the United States (See Cranton 1994). This trend begs important questions about if and how these theories reflect the experiences of groups predominantly served by the adult basic education system, such as immigrants, high school dropouts, or welfare mothers. Without a doubt, these theories provide a valuable starting point to understanding the adult learning and developmental experiences of adult basic education students—as discovered by the research conducted by Kegan et al. (2001), but it is clear that there is no universal understanding of "adult learning" and "adult development." In the next several entries, we shift our attention from adult learning and developmental theory to describing the adult basic education system in the United States, as well as the unique concerns of ABE programming and policy. A strong case can be made that as we examine adult learning in the adult basic education context, the variables of culture, ethnicity, educational background, learning

style, and sociopolitical circumstance take on important significance in our quest to understand the adult learning experience.

Maricel G. Santos and Eleanor Drago-Severson

THE U.S. ADULT EDUCATION AND LITERACY SYSTEM

Adult education programs are highly diverse in scope and objectives. This diversity in program focus reflects in part the variety of goals and needs within the adult learner population. The more commonly known program services include adult basic education (ABE), English to Speakers of Other Languages (ESOL), General Educational Development (GED) or high school equivalency, family literacy, and citizenship. These program labels should be viewed as general classifications. Program designs may vary widely from community to community and from state to state because of differences in local demographics, funding, professional development standards, and available resources.

This variation in program design may also reflect differences in the professionalization of the ABE/ESOL field across states. When there are differences across states in the infrastructures supporting professional development and training of adult educators, it is not surprising to find differences in the sustainability of quality instructional programs. Currently, there are no federal regulations about how states should handle the certification and the training of their adult educators.

A review by John Sabatini, Lynda Ginsburg, and Mary Russell (2002) highlights the range in state credentialing requirements as well as the accompanying areas of continued debate about the professionalization (or lack thereof) in the adult education field. Some areas of debate include the degree to which an ABE credentialing system should be different from or coordinated with the existing K–12 credentialing system and the question of whether or not ABE credentialing should be handled as a voluntary enterprise. For the most part, professional development in adult basic education is carried out on an in-service basis, although some states, such as

California, sanction graduate-level coursework that features ABE certification or endorsement. Sabatini, Ginsburg, and Russell (2002) examine the limitations of the higher-education route to certifying adult educators. They point out that not all states have the resources to provide higher education training to their adult educators. They also note that higher education courses often provide only limited practicum experience to their teachers. Additionally, they propose that “the presence of nontraditional teachers, including individuals who may not have completed a four-year undergraduate program or volunteers whose responsibilities evolve over time, is a strength of the current ABE service system because it increases local community participation and diversity” (Sabatini, Ginsburg, and Russell 2002, 218). In other words, a higher-education requirement to certification in adult basic education may eliminate potential teachers from historically underrepresented backgrounds in education who may be uniquely qualified to work with adult learners.

INFLUENTIAL SOCIAL FORCES ON THE ADULT EDUCATION SYSTEM

Several social forces have shaped the development of adult education programs. Thomas Sticht (2002), an adult literacy researcher, provides an overview of the nearly four-hundred-year-old history of the adult education movement in the United States, as well as details about the various social, political, and legislative events that have shaped the adult education system’s formation (see also Reid, 1999). Sticht’s review highlights several social forces that have contributed to the development of the U.S. adult education system. Here we draw upon his observations about the role of the U.S. military, immigration patterns, the tension between a focus on liberal education versus human resource development in adult education, issues regarding equitable access to adult education services, and the debates regarding the definition of “literacy.” This discussion highlights the influence of multiple forces on the scope and mission of adult education programs.

The Role of the U.S. Military

One social force highlighted by Sticht (2002) is the U.S. military, which has played an important role

in the provision of literacy education for much of the twentieth century. The pervasive use of “intelligence testing” during the First World War drew attention to the low literacy skills of many young men and immigrant populations. This led to several advocacy efforts directing public attention and federal funds to literacy education. Teaching immigrants to read, in particular, was viewed in large part as an effort to *Americanize* the non-native born. The technology that enabled intelligence testing also gave rise to the General Educational Development (GED) standardized testing program in 1942, marking another significant military contribution to the field. The test enabled many armed servicemen who had dropped out of school to join the armed forces to complete their high school education and get jobs or pursue college degrees. Today, the GED represents the most widely used mechanism for high school certification in the United States. According to the American Council on Education (ACE) (2001), a total of 655,514 adults successfully passed the GED in 2001, a 31 percent increase over the number of successful test takers in 2000. Also, according to the American Council on Education (2001), one in seven high school graduates in the United States earned their degree by passing GED tests. Some famous GED recipients include comedian Bill Cosby, Olympic athlete Mary Lou Retton, actor Michael J. Fox, Delaware’s Governor Ruth Ann Minner, U.S. Senator Ben Nighthorse Campbell of Colorado, and founder of the Wendy’s restaurant chain Dave Thomas.

The Influence of Immigration Trends

Immigrant patterns represent another powerful social force with important implications for the expansion of the adult education system in the United States. The arrival of many immigrant and refugee groups in the 1970s prompted the creation of many adult English to Speakers of Other Languages (ESOL) programs. Academically oriented English language instruction was not viewed as an appropriate model as many of the newcomers had not learned to read and write in their first language and had little formal schooling experience (Wrigley and Guth 1992). ESOL programming attracted a new wave of attention in the 1980s with the passage of the *Immigration Reform and Control Act* (IRCA) in 1986 which required

immigrants to enroll in ESOL and citizenship classes in order to apply for amnesty (Wrigley and Guth 1992; Moriarty 1998). While immigrants compose the largest proportion of the overall enrollment in federally funded ESOL classes (U.S. Department of Education 1995), native-born U.S. citizens whose first language is one other than English also enroll in adult ESOL programs.

While the primary role of the adult ESOL professional is to help non-native English-speaking adults acquire English communication skills, in practice, the job often entails a myriad of other instructional and counseling efforts beyond language instruction, such as employment skills, survival skills, cultural beliefs and knowledge, U.S. history, and citizenship requirements (Florez 1997). Although the ESOL system has been providing adults with instructional guidance on topics such as U.S. history and citizenship test preparation for many years, these areas are now largely funded by designated monies under the English Literacy and Civics Education grants program instituted in 2000. The allocation of these monies has helped to expand the development of program curricula and lesson plans that combine civics education with English language and literacy development (Terrill 2000).

Liberal Education Enterprise or Human Resource Development?

Should the adult education system strive to provide adults with a comprehensive, liberal education or should it remain focused on providing low-literacy adults with the job skills needed to succeed in today’s workforce? (We use liberal here in terms of the expanding of the mind and acquiring new forms of knowledge, not in the political sense.) Since the era of the War on Poverty, Sticht (2002) observes, this question has been the focus of debate among many adult education policymakers and practitioners. With the passage of the *Workforce Investment Act of 1998*, the latter view appears to prevail currently. Proponents of the liberal education vision (e.g., Moule 1988; Center for the Study of Liberal Education for Adults 1969) argue that in today’s knowledge-based economy, adults benefit most from access to a liberal education, one that provides them with

general skills, critical thinking skills, and collaborative work skills, as well as an ability to work in interdisciplinary contexts. Liberal education, proponents further argue, should be made available to all adults, not only to traditional college-age students in four-year institutions. The human resource vision argues that aligning adult education instruction with the demands of real-world work environments will make adult education programs more appealing to adults, motivating them to acquire new skills and workplace competencies. There are concerns, however, that the adult education system has narrowed its focus to practical workforce skills in response to the inadequate funding and resources at the expense of other lifelong learning skills.

Issues in the Definition of Literacy

The variation in program design also reflects differing orientations towards the definition of literacy. Currently, there is also no single definition of literacy. According to adult ESOL experts Heide Wrigley and Gloria Guth (1992), this lack of agreement is viewed by some as a problem needing resolution, and by others as a healthy indicator of the diversity in literacy practices and cultural beliefs. Under the *Workforce Investment Act of 1998*, literacy is defined as “an individual’s ability to read, write, speak English, compute and solve problems at levels of proficiency necessary to function on the job, in the family of the individual and in society.” This definition is meant to account for the range of skills that goes beyond being able to read and write—those that adults need to get a job and carry out their responsibilities as family members and citizens. This definition is widely accepted by policymakers who recognize that many adults—even those who have a high school education—lack the skills to succeed in our fast-paced and complex information and technology-driven society (see Comings, Sum, and Uvin 2000). The focus on workforce preparation gains special urgency in light of the fact that 64 million people in the U.S. workforce between the ages of eighteen and sixty-four are in need of improved language skills, a high school diploma, or basic skills to meet the demands of the workplace (Comings, Reder, and Sum 2001).

LEARNING IN ADULT EDUCATION PROGRAMS

Adult education programs are highly diverse, which reflects the wide diversity of needs and goals in the adults who participate in these programs. This diversity also reflects the diversity in program mission and philosophy. For example, some program curricula concentrate on explicitly teaching general education development (GED) test content and test-taking strategies, while curricula in other GED programs try to avoid the dilemma of “teaching to the test” by organizing their curricula around state adult learning standards. In line with thinking on the social context of learning (e.g., Auerbach 1992; Fingeret 1983; Reder 1987; Hornberger and Hardman 1994), some programs aim to develop curricula that explicitly address issues of gender, race, and socioeconomic status. There is also an increasing recognition that, no matter what the particular curricular focus, all programs need to respond to the broadening focus in the last decade as federal policy has shifted from emphasizing basic skills instruction to promoting workforce skill development.

Adult education professionals are faced with multiple challenges in the conceptualization of programs and the development of curricula. They struggle to balance the recommendations of state curriculum frameworks and the increased demand, at the national and state level, for accountability and outcomes assessment. Program directors often must respond to calls for expanded integration of technology into the learning process as well as improved collaboration with other programs so that adult learners may transition more effectively from one program to the next.

Adult education scholars Sharan Merriam and Rosemary Caffarella (1999a, 1999b), among others (K. Taylor 2000; Brookfield 1995; Daloz 1999; Taylor, Marienau, and Fiddler 2000), emphasize the qualitative differences between learning in adulthood and learning in childhood, in terms of the learner, the context, and the learning process. In light of this perspective, we can understand why it is important not to hold the adult learner’s classroom experience to the same expectations we might hold for a child’s experience in a K–12 setting. A child’s education, Merriam and Caffarella (1999b) point out, is preparatory in nature: the

teacher is charged with making decisions about what skills and knowledge the child should learn. In contrast, the adult education curriculum necessarily introduces issues of learner agency and responsibility as adult learning is for the most part a voluntary enterprise. In other words, adults do not stayed engaged in learning if the curriculum is meaningless to them.

This widely accepted tenet about the nature of adult learning is the starting point for several important unresolved questions about the nature of instruction and the role of the adult learner in the curriculum development process (Purcell-Gates, Degener, Jacobson, and Soler 2000). As mentioned earlier with respect to the system's struggle to define its target population and mission, these areas of tension—three of which are highlighted here—resist quick-fix approaches to their resolution.

Intensity and Duration of Instruction

Most adult learners juggle home, work, and family responsibilities while attending adult education programs. The adult education system recognizes these outside responsibilities and often offers a diverse schedule of classes throughout the week, at all times of the day, to be able to accommodate their learners' busy schedules. A limited number of studies suggest a logical relationship, that is, more hours of instruction and longer duration of participation leads to better achievement (Balmuth, 1987; Kassab, Askov, Weirauch, Grinder, and Van Horn, 2004; Kruidenier, 2002). Currently, there is no consensus in the adult education field as to what constitutes sufficient hours of instruction or adequate duration of instruction. According to Balmuth (1987), "sufficient time" not only enables learners to learn but also provides teachers with needed opportunities to do a good job teaching, which involves observing the learner, consulting other support staff, and finding other training and resources that meet the learner's needs.

The Role of the Adult Learner in Curriculum Decisions

Many adult educators and policymakers agree that the adult education curriculum needs to account for the learners' learning goals, prior experiences, back-

ground knowledge, and individual learning styles (Cook 1996; Crandall and Peyton 1993; Dirkx and Prenger 1997; Imel 1988; Wrigley and Guth 1992). Presently there is not consensus on the way or the extent to which information about the adult learners should be integrated into the curriculum. In other words, the process by which the effective integration of learner input takes place is not well understood. Nor is it clear how learner progress and persistence is affected by the nature of the learner's involvement.

Emphasizing the Teaching of Content or Learning Strategies

Adults, compared to children, bring a broader repertoire of resources to the second language learning process, including more advanced cognitive (Baker 1989) and metalinguistic abilities (Oxford and Scarcella 1994), and more diverse learning goals and expectations (Crandall and Peyton 1993). Adults also face a more compressed timeframe for learning a second language than young children (Young et al. 1994). For instruction to be optimally meaningful to the adult learner, should time be spent on teaching content and skills, or should time be spent on instilling lifelong learning habits and metacognitive strategies to promote independence in learning? Adult educators need a process by which to determine the optimal balance between the focus on content/skills and the focus on learning strategies.

ISSUES IN DEFINING THE ADULT LEARNER POPULATION

An understanding of the adult learner population goes beyond the demographic characteristics presented in the introduction. In fact, adult educators and policymakers do not agree on whether the adult education system is in fact serving the adult population that it is designed to serve. There are also disagreements about whether the system needs to expand or narrow the scope of its services in order to improve its efficacy as an educational organization. These areas of debate—of which four are highlighted here—provide evidence of the adult education system's ongoing struggle to define its mission and measure its successes.

Responding to Youth Enrollment

An increasing number of youth (referring to sixteen- and seventeen-year-olds) are enrolling in adult education programs (Hayes 2000). The increase, which remains under-researched and thus not clearly documented across states and programs, is attributed to several factors. For example, increases in the overall youth population result in a larger high school enrollment and a potentially higher rate of high school dropout. In addition, changes in welfare policy require more teenage recipients to enroll in adult education programs in order to receive aid. For many out-of-school youth who need high school credentials and workforce skills, adult education programs provide a reasonable educational alternative to high school completion. This may be a similar path taken by many academically struggling youth who seem to be “pushed out” of school when they fail to satisfy the rigorous graduation requirements instituted by educational reform efforts. Understanding the cause of the increase, Hayes (2000) points out, is less urgent than figuring out how to accommodate these younger learners at the program and classroom levels. On the one hand, the adult education system is poised to reaffirm its commitment to educating all learners. On the other hand, if academically struggling youth are not faring well in the K–12 system, they are unlikely to get the high-quality education that they deserve in the relatively under-resourced adult education system.

The Wait List Dilemma

Another area of struggle concerns the long wait lists maintained by many adult education programs. Data from states and individual programs indicate that wait lists can number in the thousands with wait times lasting several months or even years. In 1997, four million adults were enrolled in adult education classes but one million adults remained on wait lists (Tracy-Mumford 1999). The wait times are typically longest for ESOL programs compared to wait times for ABE or GED programs (National Center for ESL Literacy Education 1995, currently known as the Center for Adult English Language Acquisition). Many adult educators and policymakers view wait lists as symptomatic of an understaffed and underfunded

system. The wait list dilemma poses hard questions about the current philosophy and structure of the adult education system, as the solution may not simply be a function of funding more programs. Policymakers value wait lists because they provide leverage for requesting increases in program funds, but critics argue that wait lists do not benefit adult learners who never get to enroll.

The Case of Nonparticipants

A third area of struggle complements the focus on wait lists. There are high numbers of adults with limited literacy skills who are eligible to participate in adult education programs but choose *not* to enroll. These “targeted” adult learners are often referred to as nonparticipants or resisters. According to U.S. Department of Education data, only 8 percent of the eligible adults in 1990 were in fact enrolling in the available literacy, ABE, and GED programs (Pugsley 1990). Although the wait list issue (as described above) highlights the problems faced by adult English language learners who want to participate but cannot, the issue of nonparticipation is also relevant in the adult ESOL context as well. Data from the 1995 National Household Education Survey indicate that nearly 3 million adults were interested in attending ESOL classes but were not participating for a various reasons (Kwang, Collins, and McArthur 1997).

One pervasive assumption about nonparticipation is that the problem lies in the individual; this view contends that the individual dropped out of school and therefore, it is up to that individual to make the decision to return to school. This view of nonparticipation is strongly countered by B. Allan Quigley (1997), an expert in U.S. adult education policy and programming and one of the few researchers in the adult education field to investigate nonparticipation. Quigley argues instead that “ideological resistance” more likely explains why adults choose not to enroll. That is, adults with limited literacy skills often remember school as an extremely negative experience. Nonparticipants often cite cruel and unresponsive teachers, alienating school climates, and boredom as reasons that compelled them to drop out of school. Quigley is clear that nonparticipants strongly value education and aspire to complete their education despite their many bad memories of school

as an alienating and disengaging experience. The fact that many adult education programs still do resemble school only compounds their feelings of resistance. Quigley (1997) proposes that the adult education system needs to abandon its adherence to the traditional schooling model and better align itself with the needs and experiences of adult learners if the system is to attract nonparticipants and retain participants.

Issues of Access to Literacy Education

Under current law (Title II, of which the current *Workforce Investment Act* is a part), adult education providers are required to provide “direct and equitable access” to eligible adults. Equity issues are not new to the adult education field, which historically has been the primary provider of educational services to socioeconomically and culturally marginalized groups in U.S. society, such as the working poor, immigrants, or the incarcerated. Findings from the National Adult Literacy Survey (NALS) of 1992—perceived as the most comprehensive and statistically valid assessment of the nation’s literacy skills—presented a new opportunity to focus attention on inequities in adult literacy education. (In 2003 the National Assessment of Adult Literacy (NAAL)—an enhanced version of the NALS conducted a decade prior—was administered by the National Center for Education Statistics. At the time of publication, reports analyzing NAAL data had not been released.) The survey was designed to profile the nation’s literacy skills, using five levels of proficiency. Analyses conducted by adult literacy researcher Stephen Reder (1994) called attention to persistent gaps in literacy achievement between white and African American adults. Reder found that African American adults (75–80%) were disproportionately overrepresented in the lowest performing levels of the NALS compared to white adults (38–43%). Another disturbing trend highlighted by Reder is the gap in literacy performance for African American and white adults at different levels of educational background: on average, African American adults with college degrees scored similarly to those white adults with only a high school education. Reder also observed that, despite the narrowing gap in educational achievement between these two groups, there were no indicators that the gap in literacy achievement (as measured by the test) would be overcome. The NALS data

has provided the adult education field with an opportunity to address critical questions about equitable access in adult literacy instruction. For example, what steps are programs taking to address the barriers that may hinder the equitable access and participation of potential adult learners? How can adult educators ensure that their teaching upholds the spirit of the law regarding equitable access? According to Reder (1994), “we must support equity in functional literacy outcomes—not just equity in the amount of seat time or degrees obtained. Equity of literacy outcomes must become a policy and programmatic goal in itself, and a criterion for excellence in education” (What To Do section, para. 2).

In this section, we have attempted to highlight several issues of lingering debate about the mission and the targeted population of the adult basic education system. An important question to address might be: how will the adult education system measure its successes if it seems to be on an ongoing search for a clear mission? It is reasonable to assume that clarity of vision and goals is essential for any educational system to thrive. At the same time, adult educators have argued that it is precisely the great diversity of goals and visions that give the adult education system its vibrancy and strength.

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ADULT EDUCATION: SUMMARY AND IMPLICATIONS

In this entry, we first summarize the chapter. We highlight the need to develop stronger connections that bridge the fields of adult education and adult learning and development so that they can inform one another, which can help us, as a society, to attend to more effectively supporting adult learning. We discuss the implications of this work for policy, program design, and practice, and we detail a few activities for supporting adult learners in their quest to learn and grow.

Adult learners of the twenty-first century and the complex demands of this new technological age faced by adults, differ importantly from adult learners and conditions of prior centuries. Moreover, given

changes in immigration, work demands, and the ages at which people enter adult education, there is a lack of clarity as to *who* and *at what age* an individual is considered to be an adult learner. We have presented basic information and statistics concerning current enrollment in the adult education system, which shows clearly that while adult education is one of the areas of greatest growth in the U.S. educational system, it is sorely in need of increases in state and federal funding. In particular, we highlighted data from the Department of Education (Sticht 2004) that powerfully show the impact of investing in adult education. The lack of adequate funding for adult education is a chronic reality that we must address.

We have discussed key theories of adult learning as they emerged from the 1970s through the first years of this century. In exploring these frameworks we highlighted how different theories construct the nature of change, the key theoretical tenets, the focus of change, factors that contribute to or support those changes, and on whose experiences each theory was developed. We have illuminated the core principles of one central theory of adult development, constructive-developmental theory (Kegan 1982, 1994, 2000), and its distinguishing features among theories of adult learning.

Both types of theories are important and very useful in considering how to better support adult learning. Adult learning theories, for the most part, focus on changing *what* a person knows, their perspectives, and oftentimes their behaviors, while constructive-developmental theory (Kegan, 1982, 1994, 2000) focuses on the changes that can take place in *how* a person knows—changes in the structure of a person's underlying meaning system. These changes alter the very way a person takes in and understands his or her experiences. Great promise exists in employing theories of adult learning and adult development to adult basic education.

In presenting an overview of the theoretical history of adult learning and development theories, our goal was to show that fundamental principles of supporting effective adult learning and development have been the topic of scholarly discussion and research. These theories offer a wealth of knowledge and can be employed to inform adult basic educational practices. We believe that these theories provide an important backdrop for understanding and informing the continuing debates and complexities the current adult education system faces.

Making stronger connections between the field of adult basic education and adult learning and development is urgently needed. Theories of adult learning and adult development make clear that there are different types of changes possible when adults learn, and they also show us how the process of education can support these kinds of changes. These theories help us to understand how to support changes in skills, knowledge, reflective capacities, behaviors, and in ways of knowing. When adults are better supported in their learning in adult basic education programs, research has documented that they can generate new goals, new skills and competencies, and, in some cases, new understandings of themselves and their work (Drago-Severson 2004b; Kegan et al. 2001). This research illuminates how theories of adult learning and, in particular, a developmental perspective, can be a tool for better understanding how adult learners make sense of important aspects of their program experiences and how their learning influenced their lives as learners, workers, and parents.

Policymakers and practitioners would be wise to look to theories of adult learning and development to inform adult basic education programs, practices, and the policies that support them. This untapped resource holds great potential for strengthening adult basic education in meaningful and important ways.

IMPLICATIONS

There are important policy and practical implications to be drawn from using theories of adult learning and adult development to inform adult basic education practices. Applying these theories would shed new light on important ongoing debates and challenges in adult basic education as well as inform an understanding of learner experience and teacher practice.

Policy Implications

Thomas Sticht (2004) has illuminated the myriad of powerful benefits of human impact investment in the adult education system. Developing policies at the federal and state levels that increase their per-adult student expenditures will benefit the number of adults who are able to enroll in ABE programs, earn a high school diploma or GED equivalency, are able to se-

cure employment and/or advance in their jobs, enroll in other types of training, and receive public assistance.

However, new policies need to be created in order to support the use of theories of adult learning and development to inform ABE programs, practices, and curricula. A good first step would be to develop more effective policies to support teachers' professional development. These policies would create ongoing opportunities for teachers to learn about theories of adult learning and development so they could inform curricula and classroom practices. In particular, teacher professional development programs could help teachers engage in reflective practice (Brookfield 1995) and effective mentoring (Daloz 1999), and to develop an understanding of how to employ theories of adult learning and constructive-developmental theory (Drago-Severson 2004a, 2004b; Kegan 1982, 1994; Kegan et al. 2001) in order to support learners with different learning needs and ways of knowing.

If as a nation we want to witness adults changing in the ways that theories of adult learning and development make possible, then we must ask: Do we have enough supports in place to make seeing these kinds of changes a reality? Do we have the resources needed to make these changes happen for learners in the adult basic education system? And, do we have the needed resources to make these changes meaningful in the lives of adult learners?

More than financial support, however, it is necessary to make supports for these types of changes part of the fabric of the adult basic education system. Policy teaches us that in order for systemic change to occur, supports and structures must be established. Adult learning and adult development theories show us that the kinds of changes that are possible for adults in learning situations exist on many levels (e.g., psychological, emotional, and cognitive). These frameworks also emphasize the need for developing appropriate types of curricula and teacher practices. What types of teacher professional development programs might better support teachers as they embark on using these theories to inform their practice and curricula? How might adult basic education curricula more closely align with theories of adult learning and development? We are at a place in history where we need to begin using the richness of these well-established theories to inform adult basic education—and

we need policies that will support it. Doing so will lead to new insights and better ways of supporting adult learning.

Implications for Practice

Adult learning and adult developmental theories help us to understand the many ways in which learners' can change and grow over time—and how learners' understanding of and experiences in adult education programs can also change. These theoretical frameworks shed light on the differing criteria adults bring to the learning process and on the qualities and expectations they hold for their teachers. In addition, these theories can help teachers develop classroom practices and conditions that are likely to support the diversity of adult learners and their learning needs. Using them to inform practice can also help teachers to understand better how to adjust their own teaching styles. In addition, these theories emphasize the importance of creating bridges that anchor, support, and challenge adult learners in ways that enhance learning and growth. How might adult education programs create such bridges?

As adult educators, we need multiple ways to attend to adults' learning needs, and curricula that help learners reflect on their learning by connecting it with their personal and professional lives (i.e., work and their lives within and outside of the workplace). Employing practices that support self-reflection can be helpful in two ways. First, a space is made for learners to reflect on their lives and issues of importance to them (Knowles 1984) and to develop a new relationship to their own thinking and assumptions (Brookfield 1987; Kegan 1982, 1994, 2000; Mezirow 2000). Second, educators also learn how to better support and challenge adults as they strive to become more empowered citizens and workers who can meet the demands of the twenty-first century workplace. Creating these opportunities will enhance possibilities for them as learners and workers, and for us as a society.

In order for adults to grow and learn, it is important to create contextualized curricula and opportunities that enable them to challenge their own assumptions, reflect on their experiences and share their work with others (see Table 19.1). More specifically, theories of adult learning and adult development can be employed to inform curriculum

development. For example, developing contextualized curricula (Freire 1970), where adults are invited to engage with issues of importance to them and their lives as citizens, workers, and parents, would support their learning in meaningful ways. Creating curricula that centers on inviting adults to reflect on their learning goals, personal goals, and role-specific goals (e.g., work goals and parenting goals) could support learners with different needs (see e.g., Drago-Severson 2004a, 2004b; Stein 2000, 2002). Learners might also be encouraged to formulate new goals after participating in this process. Exercises (written and oral) that encourage adults to reflect on applying the skills learned in class to real-life situations can support development (e.g., creating opportunities to apply math principles to assist adults in figuring out financing for buying homes, mortgages). These exercises create opportunities for adults to unearth assumptions, achieve a new relationship to their thinking and, over time, to see new ways of thinking and behaving (Brookfield 1987; Kegan 1982, 1994, 2000). Creating opportunities where learners are invited to share these exercises with teachers and classmates can support the development of classroom community, but can also help adults consider alternative ways of thinking as they benefit from peer and teacher feedback and questions (Drago-Severson 2004a, 2004b).

In addition, research and theory (Daloz 1983, 1986, 1999) indicate that mentoring can be a support to learning. Developing mentoring relationships (teacher-student, student to student) in adult basic education programs could serve as another needed support for the types of changes described in this chapter.

Implications for Program Design

Research has shown (Drago-Severson 2004b; Kegan et al. 2001) that building cohorts (i.e., tight-knit groups of adults who share a common purpose), or a variation of them, into program designs supports adult learning, and oftentimes development, in powerful ways. Participating in learner cohorts has been documented as having academic, emotional, and cognitive benefits in adults. This program feature has important implications for both program design and teacher practice. It suggests how ABE practitioners might structure classroom environments to better support adults

Table 19.1

Activities for Enhancing Learning

1. Invite learners to periodically write about their goals and to share their writing in collaborative groups (for a full description, please see Drago-Severson 2004b).
2. Invite learners to write or discuss ethical questions or dilemmas they encounter in their lives. Invite them to share their ideas with their peers. (see, e.g., Taylor 2000).
3. Invite learners to create their educational life histories (see, e.g., Rossiter 1999).
4. Engage learners in self-assessment, using what learners develop together as their own criteria for assessing "good work" (Taylor 2000, 165).

who make sense of their experiences in qualitatively different ways of knowing. While working and learning in cohorts has demonstrated benefit for adults, it may not be realistic to build consistent and enduring cohort structures into all programs, given the complexities of adults' lives, program limitations, and funding requirements. Therefore, ABE programs would be wise to include as many cohort features as possible into existing program designs to enhance learning, support the development of classroom community, and possibly increase learner retention rates (Drago-Severson 2004b).

We hope that this chapter illuminates the importance of and the urgent need to strengthen adult basic education by using what we have learned from theories of adult learning and adult development. These theories teach us how adults learn and the kinds of supports, challenges, and processes that lead to meaningful changes in our lives.

In our research, we often heard adult learners say that it was "harder" for them to learn in their adult basic education programs because they were "adults" or "grown-ups" with multiple responsibilities (Drago-Severson 2004b; Kegan et al. 2001). Often we heard learners say how proud they were of themselves for being able to "stick with" learning in the programs even when they doubted their abilities. Support from family, classmates, teachers, co-workers, and supervisors gave them the encouragement they needed to continue. Hope, an adult learner originally from the Caribbean who was elected commencement speaker for her graduating class, spoke about the profound difference the kind of learning described in this chapter made for her and others in a high school diploma program. As Hope explained, "You are never too old

and it is never too late to get an education. Life is full of opportunities; you just have to reach out and grab one. Never give up your dreams” (Drago-Severson 2004b, 184).

We hope that this exploration strengthens understanding and supports to adult learning in adult basic education. We also hope that it enables us to move closer to creating learning environments where adult

learners, with diverse needs and ways of knowing, can grow and learn in the ways described in this chapter. It is up to policymakers and practitioners to make effective use of the richness that theories of adult learning and development have to offer so that dreams like Hope’s can be realized across our nation.

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CURRENT ISSUES IN HIGHER EDUCATION

Higher education is at the crossroads, facing demographic changes, on-demand learning, and privatization. Each of these issues is discussed in the following entries dealing with for-profit higher education institutions, academic ownership, and student diversity. The issues of for-profit institutions, academic ownership and property, and student diversity are examined thoroughly in light of political, socioeconomic, and technological changes of traditional public and private colleges and universities. Changes in societal attitudes and technological advances have allowed for innovative structures to be developed in higher education. The educational opportunities that have arisen provide a gateway to both nontraditional and traditional college students seeking a college education. Programs that are now becoming more performance-based are beginning to gain a foothold in higher education. It can be demonstrated that these performance-based programs have been initiated by the standards-based movement, which has migrated from primary and secondary schools and has infiltrated institutions of higher education. The new performance-based programs are well suited to employers who are more concerned with what candidates can do rather than what they were supposed to have learned.

For-profit institutions of higher education, the first theme of this chapter, have gained national attention. The college or university, which the public has taken for granted to be a traditionally not-for-profit institution, has become an increasingly attractive for-profit business proposition. For-profit institutions have successfully integrated a business model to compete aggressively in the higher academic arena. It is clear that privatization is increasingly palatable to private sector investors who consider higher education to be a good investment. What started out as

family-owned businesses expanded into large education corporations whose stock is traded on Wall Street. Over 4,300 for-profit higher education institutions operate campuses throughout the United States with national and international locations. Large corporations such as the Apollo Group, which owns and operates over 150 campuses, Corinthian Colleges with eighty-one campuses, and Kaplan Higher Education with forty-seven campuses are examples of successful for-profit higher education institutions. The University of Phoenix, owned by the Apollo Group, with its 130 campuses, has a total enrollment of 175,000 students. What has made these for-profit institutions of higher education so attractive to private investment is the reciprocal relationship between the economy and the sale of credit hours. To be sure, a paradox exists between higher education and the general economy. When the economy is poor, more seats in institutions of higher education are sold. This makes higher education a good hedge against other investments. With society becoming more technologically advanced, careers that at one time either required on-the-job training or a high school diploma may now require college-level education.

The second theme discussed in this chapter has to do with the rights of ownership of academic work. The entry on ownership of academic knowledge discusses issues of faculty copyrights and the “work for hire” doctrine, faculty ownership of lectures, orders of authorship, plagiarism, patent ownership, and technology transfers, inventorship, parsing patent rights, and promoting the public domain. Since 1975, increases in interest and litigation regarding each of these issues have taken place in higher education. Intellectual property claims are generally expressed through copyrights or patents. It is generally accepted that copyrights protect expressions of an idea while

patents claim legal ownership of an idea. The holding of copyrights and patents by faculty has led to increasing controversy regarding claims of ownership of academic work. Faculty copyrights and the “work for hire” doctrine are also discussed with regard to their particular meaning in higher education.

It is interesting to note the differences in the “work for hire” doctrine when applied to the academy as opposed to other work environments. Other issues of ownership concerning distance education and how technology may change our present understanding of ownership of academic lectures and demonstrations are also discussed. Parallel to this phenomenon is the growth of the technology-based business involving partnerships between institutions of higher education and private companies. The increase in business-related investment in university research has also complicated intellectual property rights. Coupled with a desire for continued economic growth and pressures from international competition, the concepts of intellectual property rights and the American patent system are constantly questioned by the general public.

The third and final theme in this chapter has to do with increasing student diversity in American higher education. The entry on student diversity discusses social and historical issues, the evolution of diversity on campuses, and research synthesis on diversity. The first step toward increasing diversity on campuses is to recognize the barriers that may unfairly discriminate against certain segments of the population. All colleges and universities receiving federal and state funding have adopted principles of equity that prohibit discrimination on the basis of sexual orientation, cultural or ethnic background, and physical or learning disabilities. A 1996 report sponsored by the National Association of Scholars reported that 50 percent of the fifty top-ranked colleges and universities had diversity requirements (NAS 1996). In a 1992 survey of 196 colleges and universities, one-third had a multicultural general education requirement (Levine and Cureton 1992).

In reviewing the mission statements of institutions of higher education, one generally finds comments related to the promotion of diverse student and faculty bodies. Past college practices, which have embraced affirmative action as a method of increasing diversity, have been challenged. However, recent court decisions have determined that admission decisions

based on a minority category can be an acceptable means of achieving campus diversity. In support, the United States Supreme Court determined that diversity assumes an important role in certain considerations for college entrance. Outcomes of arguments from the University of Michigan at Ann Arbor report that diversity enhances all students’ experiences at the college or university. As Peter Schmidt (2004) reports, “The U.S. Supreme Court decided two law suits involving race-conscious admissions policies [as a way to increase diversity] of the University of Michigan at Ann Arbor.” This was considered “a victory for affirmative action because the court had accepted [the University of] Michigan’s basic argument that the educational benefits of diversity justify the consideration of race in college admissions decisions” (p. A17). The entry on diversity in higher education concludes with the benefits that students receive from learning in culturally diverse settings. It is clear from the entry that systematic procedures and policies need to be developed and implemented if equity and justice are going to be achieved in American institutions of higher education.

Stephen J. Farenga and Daniel Ness

FOR-PROFIT HIGHER EDUCATION

For-profit higher education refers to private, postsecondary institutions that may use excess net earnings to compensate their owners for the assumption of risk. Individuals in control of not-for-profit institutions of higher education, in contrast, can receive no compensation other than wages and expenses. Despite serving a rather small proportion of the student market, higher education’s for-profit sector has attracted attention as an alternative to the not-for-profit models employed by more traditional public and private colleges and universities. For-profit institutions have a reputation for using a distinctive academic model to aggressively compete for students enrolled in employment-related education and training programs. Since a few of the largest for-profit providers have tended to be the focus of the discussion, however, the aggressive nature of the sector’s competitiveness is probably overstated, and the variety of academic models these institutions employ is probably understated. For-profit

institutions are an increasingly important part of the postsecondary landscape, and are indicative of the diversity of missions and values connected to higher education in the United States, and of the global expansion of private higher education.

A BRIEF HISTORY OF FOR-PROFIT HIGHER EDUCATION

Many observers of higher education incorrectly refer to for-profit higher education as a new or emerging phenomenon. Historically, in the entrepreneurial United States, profit making and education were not incompatible. Several current for-profit institutions have origins that go back more than a century. In fact, earning a profit was the goal of the first college proposed in the American colonies: the Virginia Company's college at Henrico in 1617. Inauspiciously, the funds raised for this early corporate effort in higher education were diverted for other purposes, and the institution was never established. Through the nineteenth century, however, for-profit providers contributed significantly to training students in the skills and trades demanded by the Industrial Revolution, and were important educators of doctors, lawyers, teachers, and businessmen. As the demand for publicly supported education increased in the latter half of the nineteenth century, for-profit higher education began to be pushed to the margins of educational practice. In the early twentieth century the progressive ideals of education as a public trust became firmly established, and higher education was increasingly dominated by public institutions, especially community colleges. For-profit higher education could not easily compete with these widely available and very inexpensive postsecondary options, and retained a significant presence primarily in low-level training programs symbolized by the much maligned matchbook cover advertisements.

In the 1960s and 1970s the competitive position of for-profit higher education began to improve. The baby boom generation entered college in droves, increasing demand beyond the capacity of existing institutions. The 1972 reauthorization of the Higher Education Act provided federal financial aid for college students, giving for-profit higher education essentially the same access to these funds as public and private not-for-profit educational institutions. Regional accreditors began accrediting for-profit institutions in the mid-1970s, al-

lowing them new avenues of legitimacy as real colleges and universities. And finally, college began to take the place of high school as the gateway to entry-level employment and career advancement, leading adult students and others to seek access to a career-focused postsecondary education. Since then, the current era of for-profit higher education has been marked by growth and expansion, though the notion of providing education for private gain rather than for the public good remains unconventional.

FOR-PROFIT HIGHER EDUCATION TODAY

Today, for-profit institutions of higher education continue to focus on training students for occupations and professions, while including limited coursework in general education or the liberal arts. According to the National Center for Education Statistics, there are approximately 760,000 students enrolled in 4,300 for-profit institutions of higher education in the United States. This represents about half of all U.S. postsecondary institutions, but only 5 percent of the total student enrollment. About eight hundred for-profit institutions granted 120,000 degrees in 2001: 65 percent of the students earned associate degrees, 22 percent earned bachelor's, 12 percent earned master's, and less than 1 percent earned doctoral degrees. While representing a minority of the for-profit sector, degree-granting institutions have been most associated with the growth of for-profit higher education since the 1970s (U.S. Department of Education 2003).

The faculty at for-profit institutions generally have extensive professional experience, and are often hired as part-time instructors while maintaining full-time employment in their field. Traditionally, faculty at not-for-profit private and public institutions have primary responsibility for planning the curriculum. That is much less common in the for-profit sector, where the programs are more often determined by market demand and the need for cost control than the interest of an individual faculty member. Still, most degree-granting for-profit institutions do include faculty in program and curricular design discussions, particularly at those schools with regional or national accreditation. For-profit institutions expect their faculty to primarily serve as teachers, however, rather than as curriculum designers. In addition,

faculty are rarely paid to be scholars or researchers, though some for-profit institutions do encourage faculty to publish in academic journals and present at scholarly conferences.

Many for-profit institutions take advantage of new technologies to offer programs at a distance. While it is important to note that not-for-profit private and public institutions are engaged in distance education as well, it is a rather prominent aspect of the for-profit sector. Most of the for-profit online or “virtual” universities operate as either stand-alone institutions, like Capella University and Jones International University, or exist as a division of a campus-based institution, such as the University of Phoenix Online and the Online Division of American InterContinental University. Many for-profit distance education ventures that were prominent during the dot-com boom of the late 1990s, such as Fathom.com and HungryMinds.com, attempted to develop and/or market the educational products of not-for-profit colleges and universities. Few of these still exist. A more nefarious brand of for-profit distance education company is known as a “diploma mill.” Unaccredited institutions that sell bogus degrees based on little or no academic work, diploma mills are considered fraudulent organizations and are generally not counted with institutions in the legitimate for-profit higher education sector.

As has been the case historically, most for-profit institutions in the United States are family-owned small businesses. They continue to provide career-oriented education to students much as their predecessors did, with relatively small enrollments and fairly traditional academic models. Beginning in the 1990s, however, a new breed of corporate higher education emerged. With growing enrollments and unconventional academic practices, these organizations have dominated the discussion and debate surrounding the modern rise of for-profit postsecondary institutions. Driven by Wall Street’s demand for continuous expansion, about a dozen higher education corporations are establishing new campuses throughout the United States and internationally, and have developed a strategy of purchasing smaller, independent for-profit schools and placing them under central corporate management. Some of the more prominent higher education corporations include The Apollo Group (which owns over 150 campuses), Corinthian Colleges (81 campuses), ITT Educational

Services (77 campuses), Career Education Corporation (75 campuses), Education Management Corporation (65 campuses), DeVry (58 campuses), Kaplan Higher Education (47 campuses), Strayer Education (28 campuses), and Sylvan Learning Systems (26 campuses). The colleges and universities owned by these corporations include American InterContinental University, Argosy University, The Art Institutes, Concord Law School, DeVry University, ITT Technical Institutes, Kaplan College, National Technological University, Strayer University, The University of Phoenix, and Walden University. The University of Phoenix alone has over 130 campuses in thirty states and Canada, with a total enrollment of 175,000 students. Owned by the Apollo Group, it is the largest private university in the United States, and has more than three times the enrollment of even the largest public universities.

There is a distinctive academic model associated with for-profit institutions of higher education that largely reflects the practices of these new corporations. The model involves four components. First, for-profit institutions offer programs narrowly targeted to serve nontraditional students (part-timers, working students, and adults) seeking employment in high-demand fields. They do not offer the residential campus experience of many four-year institutions, nor the broad general education suitable for a student straight out of high school. Second, the for-profit curriculum is developed and managed administratively to serve institutional goals. The faculty may be involved in curricular matters at a for-profit college or university, but they do not maintain the extensive curricular prerogatives of their colleagues in the not-for-profit private and public sectors. Third, rather than employing a full-time faculty of professional academics, for-profit institutions hire instructors with career credentials to teach individual courses. Few offer tenure to their faculty, and current experience in the field is more important than academic credentials in the for-profit classroom. Finally, for-profit institutions offer courses on an accelerated schedule, allowing students to finish their course work much quicker than the traditional ten- or fifteen-week semester calendar allows. While none of these characteristics is unique to the for-profit sector or universal within it, together they suggest an innovative—and controversial—model for the provision of higher education.

IMPLICATIONS OF FOR-PROFIT HIGHER EDUCATION

This combination of innovation and controversy is what draws attention to for-profit higher education beyond what might be suggested by its size relative to its not-for-profit peers. For-profit higher education raises significant questions regarding education as a public good, academic integrity and legitimacy, and the influences of market forces on the curriculum. In much of the recent literature on the subject, for-profit higher education is described as transformational, though the positive or negative evaluation of that transformation can often be ascribed to the prior biases of the observer. It is clear, however, that larger trends of privatization are influencing the growth of for-profit higher education, both domestically and internationally. This suggests that these institutions are less the cause of a transformation than evidence of it.

The future of for-profit higher education, then, seems to be following its history. As society began envisioning the provision of education as a public trust, for-profit institutions saw their fortunes wane. Now, as the ability of private enterprise to serve public ends gains acceptance, the provision of higher education for a profit seems to fit the spirit of the times.

Kevin Kinser

OWNERSHIP OF ACADEMIC KNOWLEDGE

Professors and universities have claimed intellectual property rights in various forms of academic work almost since the inception of modern intellectual property law. Those claims have become increasingly controversial, however, as the academy adapts to the emergence of an information economy in which academic knowledge is a valuable source of revenue.

ACADEMIC COPYRIGHTS

Intellectual property claims in academic work take two principal forms: copyrights and patents. Copyright law protects the *expression* of an idea, rather than the idea

itself, by giving an author exclusive rights in his or her works, including the rights to reproduce the works, to prepare derivative works, to distribute copies or recordings, and to display the works publicly. That protection lasts for many decades: a work created today is protected by copyright for the entire life of the author plus seventy years or, if the work is anonymous or created under a “work for hire” agreement, for ninety-five years from publication or 120 years from creation, whichever is shorter.

These rights derive from a seventeenth-century royal monopoly on printing granted to the British Stationers’ Company. In the second half of the seventeenth century, printers and authors argued that a similar monopoly should be granted to authors. Their efforts culminated in the 1710 Statute of Anne, which granted to authors a copyright in their registered works for up to twenty-eight years.

The United State Constitution directed Congress to “promote the progress of science and the useful arts by securing for limited time to authors and inventors the exclusive right to their respective writings and discoveries.” (U.S. Const. art I, sec. 8). Congress enacted the first Federal copyright law in May 1790.

Faculty Copyrights and the “Work for Hire” Doctrine

Faculty, rather than research institutions, are the owners of most copyrightable scholarly works. Nonacademics sometimes find this surprising, for faculty works could be considered “works for hire.” Under work for hire doctrine, copyrightable works produced by employees in the scope of their employment are the property of the employer. Commissioned works may also fall under this rule, depending on the nature of the work and the extent of direction and motivation supplied by the person commissioning the work. The legal question in both instances is, who has the “right to control the manner and means by which the product is accomplished” (*Committee for Creative Non-Violence v. Reid* 1989).

Professors are university employees for most purposes (Kulkarni 1995; Burk 1997). Treating their works as works for hire, however, would mean that universities could assert copyright in those works. Such institutional copyrights could be a threat to academic freedom because an institution could use

its copyright to prevent or require distribution of a work. Many university copyright policies, therefore, explicitly state that faculty own the copyright to “traditional scholarly works”—including research articles, books, and teaching materials—made by “independent academic effort.”

The policy of treating faculty works as exceptions to work-for-hire rules is not universal. Some educational institutions assert copyright in works created by faculty in distance education programs. Faculty in these programs argue that these institutional copyrights undermine academic freedom, and the matter has not yet been resolved. Even in institutions that follow the traditional rule, moreover, the increasing use of new technologies has made it more difficult to define traditional scholarly works and independent academic effort. For example, extensive university resources (e.g., staff, computers, software) may be needed to develop and use new media technologies for teaching, such as web pages. The use of these resources could provide a basis for a university to assert that it substantially controlled the production of the work, meaning the work in question would look more like a traditional work for hire than a traditional scholarly work.

Notwithstanding these developments, the tradition of assigning copyright in scholarly works to faculty continues to find support in a legal doctrine called the “academic exception.” This doctrine, which treats teachers and other academicians as uniquely exempt from work-for-hire law, was developed in part through lawsuits brought by faculty lecturers.

Faculty Ownership of Lectures

One of the earliest recorded copyright disputes involving lectures occurred in Scotland in the late 1800s, between a bookseller, William S. Sime, and a philosophy professor, Edward Caird. Without permission, Sime used student notes to reproduce Caird’s lectures, which he sold under the title “Aids to the Study of Moral Philosophy.” Sime listed the student who took the notes, William Finlay Brown, as the author. The outraged professor promptly sued for copyright infringement. The House of Lords and Privy Council ruled in Caird’s favor, and in the process set a clear precedent for faculty ownership of lectures (*Caird v. Sime* 1887).

The *Caird v. Sime* ruling was left virtually unquestioned in British and American law until the late 1960s, when enterprising optometrist J. Edwin Weisser started a lecture note-taking service at the University of California, Los Angeles (*Williams v. Weisser* 1969). With approval from the Dean of Students, Weisser hired students to audit courses, take notes, and pass those notes on to him. Weisser copied the notes and sold them to other students. Anthropology professor B. J. Williams sued Weisser for copyright infringement based on notes taken by a student in his class. Weisser argued that the lectures belonged to the university rather than Williams, on a work-for-hire theory. The court rejected that theory and held that university professors hold copyright in their lectures (*idem*).

The issue came up again in the late 1990s, when various private companies began to hire students to take notes and then placed those notes on the Internet. Universities around the country soon threatened lawsuits for copyright infringement against these companies. Because these companies quickly went out of business due to an economic downturn, the issue was rendered moot.

Orders of Authorship

Copyright law acknowledges that some works are collaborative, such as a research paper produced by the shared effort of a student and a professor. All identifiable contributors are considered equal authors and owners of a joint work, with an undivided right of ownership in that work. To be identified as a joint author, however, each individual must have contributed an independently copyrightable element. In addition, each author is granted property rights in the work as if he or she were the sole author. Authorship, therefore, is “shared” only in an economic sense. For example, creators are not obliged to consult with other authors regarding subsequent use of the work as long as they “share” the profits of that use.

Copyright law diverges somewhat from academic practice in its definition of “the author,” for named authorship of an academic work can sometimes derive from the contribution of elements that are not independently copyrightable, such as the provision of research funding or minor editing. In many disciplines, for example, student and postdoctoral researchers will list as an author the principal

investigator who received the grant that funded the research that led to the paper, whether or not the investigator participated in the research itself. For this reason, it is not always clear that an individual listed as an author of a work would be treated as such in a court of law.

Copyright law's treatment of joint authors as equal owners of the work, with equal use rights, also diverges from academic practice, for in academia authorship is often ranked. Thus, for example, the most important contributor to an academic paper often will be placed first in the list of authors. "First authors" are understood to be primarily responsible for the work, and therefore the real "owners" of the work, deserving the honor and/or criticism the work merits. At the same time, the last-named author, if he or she is the principal investigator of the lab within which the work was produced, may have as much or more control as the first author over how and when a work is published.

Plagiarism

Copyright law is not the only means by which academicians claim a kind of ownership interest in their creative expression. In fact, theft of a work in academic circles is often called plagiarism rather than copyright infringement. Both terms refer to the improper reproduction of all or part of a work, but they differ with regard to the nature of the violation. Copyright infringement cases tend to focus on "the work," and particularly the existence of substantial similarity between the original and the infringing work. Guilt depends on the fairly extensive borrowing of explicit expression, and it is not excused by attribution. Plagiarism, by contrast, involves ideas as well as expression, explicit borrowing may be slight or nonexistent, and attribution will often resolve the issue. This last aspect reflects a different valuation system with a much older pedigree. Condemnation of plagiarism in this sense was present in ancient Rome and Greece, where "literary theft" was viewed as an appropriation of another's honor and "immortal fame" (Long 1991, 856). The term derives from *plagiarius*, to kidnap, and it signifies breaking a connection between the author's name and the work (Stearns 1992; St. Onge 1988).

Yet the connection between the name and the work also marks a point of shared meaning between pla-

giarism and copyright, for a tight linkage between authorial identity and authorial property is one of the pillars of modern copyright. Seventeenth- and eighteenth-century copyright advocates constructed the work as the embodiment of the author, "the objectification of the writer's self" (Rose 1993, 121). The object itself could be copied, and the ideas within it circulated, but the author's expression remained her own. Thus copyright, like plagiarism, historically acknowledges an intimate relationship between property and identity.

Plagiarism usually is punished by extralegal means. For example, a plagiarist may be fired, shunned by his or her colleagues, or, if he or she is a student, expelled from the university. Legal action is possible in some cases, however, under laws designed to prevent scientific fraud.

OWNERSHIP OF ACADEMIC INVENTIONS

Academics may claim ownership of their *expressions* through copyright law, but they usually claim legal ownership of their *ideas* through patent law. Patent law finds its roots in early modern Europe. Seeking to encourage the importation of knowledge to their communities (even as they sought to contain its exportation), fifteenth-century Italian city-states awarded limited monopolies to individuals for novel and/or innovative techniques and machines. Noting the success of the practice, other European countries followed suit. United States patent laws were patterned on Britain's Statute of Monopolies of 1623, which granted a fourteen-year monopoly to the "first and true inventors" of "new manufactures."

A patent grants to an inventor the right to exclude others from making, using, or selling his or her invention. To be patentable, the invention usually must be a novel, useful, and nonobvious process, machine, article of manufacture, composition of matter, or any new or useful improvement thereof, created by a human. The monopoly generally lasts twenty years from the date an application for the patent is filed in the United States Patent Office.

Because patents are supposed to encourage progress, an inventor must prove that her idea is a new contribution to the human fund of knowledge. But novelty is not enough—the idea also must be nonobvious to a person of "ordinary skill in the art"

(1623). Finally, the invention must “do” something—it must accomplish a useful task.

Patent Ownership and Technology Transfer

Unlike traditional scholarly works, faculty inventions produced with university resources are rarely owned exclusively by the creator. Through a combination of policy and law, professors and universities share ownership of academic inventions and work together to transfer that knowledge to the private sector through patenting and licensing arrangements. These arrangements are commonly described as “technology transfer.”

Patenting of university inventions is not a new phenomenon. Several U.S. universities had limited programs and foundations dedicated to the administration of patents based on university research in place in the 1920s. These programs were often portrayed as necessary to prevent the unethical exploitation of research. Yale University professor Yendell Henderson, writing in *Science* in 1933, put the argument as follows.

It is properly the business of the creative scholar to see to it that, if possible, his ideas serve mankind in his own generation . . . he should [also] see to it that his invention is not misused. He should control it. He should find one or more high-grade concerns to develop it. He should afford them at least such little protection as a patent gives against cut-throat competition [and thereby] so far as possible prevent the sale of inferior or harmful imitations.” (in Palmer 1947, 82)

Most of these programs were relatively small, however, reflecting a persistent institutional ambivalence about the patenting of inventions.

Today, by contrast, universities actively promote technology transfer. Indeed, Henry Etzkowitz and Loet Leydesdorff (1997) argue that the universities are now equally interested in the advancement and the commodification of knowledge. Through patenting of inventions discovered in the course of academic research, consulting arrangements, and the formation of “incubators” for new technology companies, entrepreneurial professors and their universities have become active participants in the information economy.

The roots of this development lie in the confluence

of several events in the 1970s and 1980s. First, the growth of new technology-based businesses around the University of California at Berkeley, Stanford University, and the Massachusetts Institute of Technology called attention to university contributions to economic growth. Second, private companies seeking participation in that economic growth by developing inventions arising from federally sponsored research found their efforts frustrated by complex and sometimes arbitrary licensing rules. Meanwhile, industrial investment in university research increased, and private companies began to demand intellectual property rights in the research they themselves sponsored. Finally, the economic growth of Japan and Germany, coupled with high inflation and recession in the United States, sparked a national discussion of the sources of U.S. economic growth or lack thereof—including one of the accepted pillars of American ingenuity, the patent system.

In 1980, Congress responded to these events by passing the *Bayh-Dole Act*. Under the provisions of the act, research institutions now have a clear first claim to patent rights in inventions that emerge from research financed by the federal government. These patent rights may be licensed to private entities that wish to develop and market the inventions. If the institution chooses not to pursue a patent on a given invention, ownership reverts to the funding agency, which may assign it to the inventor.

Several other developments in the 1980s laid the final groundwork for a surge in technology transfer. First, the Supreme Court decisions rendered patentable both living organisms and software, substantially expanding the subject matter available to university technology transfer offices. Second, universities scrambling to respond to a decrease in federal research funding became more interested in patenting and licensing as a way to generate revenue, demonstrate the continuing usefulness of the university to the nation, and develop relationships with potential industrial “partners.”

These efforts have paid off, for universities now earn millions in royalties from patented inventions. A portion (usually a third) of these funds goes to the professor-inventors, but the royalties are also used to support further research. While this revenue stream is still small compared to a major university’s research budget, it is enough to encourage further technology transfer efforts.

Inventorship

Inventorship is a frequent challenge to efforts to patent academic knowledge. Unlike copyright law, which allows more than one individual to own a song if each individual can prove he or she produced it independently, patent law only permits the “original and first” inventor(s) to claim property rights. (See McSherry 2003.) Applications must be filed in the name(s) of the inventor(s), who take an oath affirming that they indeed fit the statutory description. If the inventorship is incorrect, the patent can be invalidated.

Under U.S. law, only the individual(s) who conceived the invention and reduced it to practice may be called “inventors.” Because academic research is often done in a group context, it can be difficult to identify the inventor of a given invention. This problem is exacerbated by the hierarchical nature of academic research. Professors may insist on being named as inventors even where they are not involved in the conception or reduction to practice of the invention, because they would normally be named as authors in any publication arising from the same research. Attorneys and university administrators must therefore work closely with university researchers to determine the legal inventor of any invention resulting from academic research.

Parsing Patent Rights

Determination of the direct and indirect claimants to patent rights in an invention can be equally challenging. Most universities claim patent rights in any invention developed using their resources. Under some circumstances, however, private entities may contract for a specific piece of research and obtain rights in any invention arising from that research. Another research institution may have certain rights if, for example, a researcher visiting from that institution played a part in the invention. Finally, an inventor may claim that the invention was developed through a consulting arrangement rather than with university resources. To forestall conflicting claims, some universities ask scholars to keep careful track of the uses of their professional knowledge and skills, as well as university equipment.

Universities and researchers must also keep track of the use of patented research tools, for companies that

provide patented materials for use in university research sometimes attempt to use their patents to claim rights in inventions arising from that research. In the mid-1990s, for example, a pharmaceutical company sought to force all universities using its patented research tool to assign to the company rights in inventions developed using that tool, and forbade researchers from providing the materials to any university that refused to agree to its terms. Many universities capitulated, but the National Institute of Health, Harvard University, and the University of California refused. The company eventually withdrew its demands.

PROMOTING THE PUBLIC DOMAIN

Some members of the academy and the general public object to the assertion of intellectual property rights in academic work, because they believe such claims undermine the status of academic research as a public resource. From this perspective, that public resource should be sustained by a gift economy based on the reciprocal and personalized exchange of gifts—such as research papers—rather than the marketing of private property.

Other professors, as well as universities, respond that they can only preserve academic knowledge as a public resource by treating it as private property. Every form of intellectual property relies on and takes from a public domain of knowledge. Because the public domain is understood as a kind of space of free appropriation, however, it is difficult to ensure that an idea, left “unprotected,” will not be appropriated by a private entity as its own. Even published ideas can be reworked by new “inventors,” and a patent on that “new” idea used to limit commercial and even noncommercial use of the original idea. By claiming intellectual property rights in their works—nominally withdrawing them from the public domain—professors can help ensure that those works remain publicly available.

This latter view is reflected in another new trend in ownership of academic knowledge: efforts to use intellectual property rights to promote a “knowledge commons.” For example, the Massachusetts Institute of Technology has established a system for licensing its copyrighted course materials free of charge. Users must agree that their use will be noncommercial, that full credit will be given to MIT and, if appropriate, the professor who developed the materials, and

that any derivative works based on the materials will be offered on the same terms.

INTELLECTUAL PROPERTY MANAGEMENT AND THE ACADEMY TODAY

Thirty years ago, ownership of academic knowledge was of little concern to most scholars and administrators. Today, university presidents identify ethical management of intellectual property as one of the principal duties of the academy (Kennedy 1997). Fulfilling that duty has led to the development of new sources of revenue, a new role for the university in the information economy, and new approaches to both ownership and academic knowledge.

Corynne McSherry

STUDENT DIVERSITY IN HIGHER EDUCATION

In July 2003, the U.S. Supreme Court determined that diversity is a compelling governmental interest that justifies certain narrow considerations of race. One of the interests highlighted by the Court, which student body diversity appreciably helped to achieve, was the broader educational mission of institutions of higher education. Here, a majority of the court held that diversity contributes to building individual students' knowledge, to advancing existing knowledge, and to preparing students to better serve society as workers, citizens, and leaders. These contributions associated with diversity helped to persuade the Court to hold that it is in the best interest of the government to allow for certain narrow admissions practices that enable institutions of higher education to better fulfill their overarching mission, since our increasingly diverse nation will eventually rely upon students educated in those institutions to fuel the nation's economy and to shape its moral, civic, and public life.

The Supreme Court's understanding of the important role that student diversity plays in fulfilling the educational mission of higher education institutions was based in part on a growing body

of empirical evidence that established how diversity enhanced learning outcomes for students. The importance and usefulness of this body of research and other recent studies is not limited to just making a legal case for race-conscious admissions practices. Rather, this set of findings also offers many relevant and significant implications for institutional practice, particularly if educators are truly committed to realizing the added benefits associated with enrolling a diverse student body. Thus, a main goal of this entry is to synthesize the existing empirical evidence about the benefits of diverse learning environments for students and, based on those findings, to identify some key principles that would help to maximize for students the benefits associated with diversity. Before synthesizing this body of research, it is helpful to explain the concept of "diversity" as it has evolved in U.S. higher education.

THE EVOLUTION OF DIVERSITY ON CAMPUS

The concept of diversity has certainly come a long way. Over the course of three and a half decades, this concept and its related set of interventions have evolved to encompass a broad set of purposes, issues, and initiatives on college campuses (Chang 2002). The earliest initiatives to increase minority access on predominantly white campuses and later to enhance gender equity were prompted by desegregation mandates as well as social justice concerns grounded in democratic principles of equal opportunity and equality. Although the issue of equitable access for underrepresented students of color remains of paramount interest, since the mid-1980s concerns about their persistence and academic success have become another important thrust of diversity efforts in higher education. Additionally, addressing ongoing incidents of racial and ethnic hostility directed toward students of color and the evolution of what Lawrence Levine (1996) termed "a more eclectic, open, culturally diverse, and relevant curriculum" (p. 171) have also become important concerns of a rapidly expanding diversity agenda. These trends did not center only on race and ethnicity, but also encompassed other high stakes categories (i.e., gender, class, sexual orientation, and disabilities).

The oversimplified historical account above makes

clear several crucial points about campus diversity. First, the concept of diversity has evolved in a manner that now encompasses a wide range of issues related to democratizing nearly every aspect of higher education. Second, this concept is closely linked to a set of broad and varied campus activities and initiatives. Third, those activities and initiatives or diversity-related interventions are not limited to improving only the proportional representation of underrepresented racial/ethnic minority students but seek to also address multiple aspects of campus life and climate as well as the needs and interests of other groups of students. Last, given this evolution, the concept of diversity is perhaps more accurately understood as a process with a set of institutional interventions than as a single outcome that targets only student body composition. According to Stephen Macedo (2000), "At its best, talk of diversity . . . reminds us of the extent to which the promise of freedom and equality for all remains a work in progress: only partially realized, only partially understood" (p. 3).

The broad set of institutional interventions linked to diversity suggests that diversity now seems to touch nearly every aspect of academic and civic life. Those efforts are leaving an indelible mark on higher education and are having widespread educational impact. At the same time, the application of diversity is not uniform across college campuses and some places do a much better job of maximizing the benefits associated with diversity than others. A synthesis of a body of empirical research follows to help clarify how applying diversity can add significant value to students' learning and educational experiences.

RESEARCH SYNTHESIS

Because of the recent national attention on the constitutionality of race-conscious admissions practices, much of the empirical research about diversity in the last five to ten years has focused mainly on racial/ethnic diversity with particular interest in enrolling a larger proportion of underrepresented students (African American, Latino/a, and Native American). It is conceivable that this research could be generalized to address other issues, such as diversity with respect to socioeconomic status or sexual orientation, but this has yet to be empirically established. This limitation with the body of research to be dis-

cussed should be kept in mind when considering its practical significance.

Several recent research reviews illustrate well how various aspects of racial and ethnic diversity within higher education help promote benefits of assorted kinds for undergraduate college students (see for example: Milem, Chang, and Antonio 2004; Hurtado, Dey, Gurin, and Gurin 2003; Milem and Hakuta 2000; Hurtado, Milem, Clayton-Pedersen, and Allen 1998, 1999; Smith et al. 1997). Basically, these reviews show that diversity-related benefits are far ranging, spanning from benefits to individual students and the institutions in which they enroll, to private enterprise, the economy, and the broader society. There was remarkable consistency among those reviews concerning both empirical studies considered and conclusions drawn.

One important conclusion that emerged from them is that the vitality, stimulation, and educational potential of an institution are directly related to the composition of its student body, faculty, and staff. Campus communities that are more racially diverse tend to create more richly varied educational experiences that help students learn and prepare them better for participation in a democratic society. One reason for this is that race still shapes opportunities and experiences in U.S. society. Subsequently, students of different racial groups at the point of college often have differing opinions and viewpoints about a wide range of pressing contemporary issues. Although individuals of any given race hold the full range of opinions, as a group, average viewpoints differ from each other on such issues as the death penalty, consumer protection, health care, drug testing, taxation, free speech, criminal rights, and the prevalence of discrimination.

According to one of the reviews noted earlier (Milem, Chang, and Antonio 2004), a set of studies shows that those racial differences in viewpoints at the student level contribute to establishing a student body with a greater dispersion of opinions. Those studies show that the dispersion of opinions in certain domains (i.e., the extent to which a student feels that racial inequity is a prevalent issue that requires remedies such as affirmative action and the degree to which a student endorses more lenient treatment and punishment of criminals in our society) increase as the proportion of underrepresented students in an entering class increases. It appears from these find-

ings that increasing racial diversity leads to a broader collection of thoughts, ideas, and opinions held by the student body, and this in turn increases the probability of exposing a student, irrespective of his or her race and opinion, to a wider range of perspectives regarding a particular issue.

Perhaps the above core characteristic of a diverse campus community is the key mechanism by which diversity makes an intellectual atmosphere, according to Justice Lewis Powell, more “conducive to speculation, experiment and creation—so essential to the quality of higher education” (*Regents of the University of California v. Bakke*). According to Robert Bickel (1998), this belief that exposing students to a wider range of opinions improves the quality of those students’ intellectual advancement can be traced back to John Stuart Mill’s famous argument penned in his 1859 essay *On Liberty* (republished 1963). Mills argued that popular opinions must be submitted to the “marketplace of ideas” and suggested that when perceptions are narrowed by the limits or biases of experience, geography, education, or class and become the basis of judgment and social policy, true social advancement is ostensibly compromised.

The educational benefits associated with exposure to different experiences, viewpoints, and opinions have also been linked to psychological theories. Several of the reviews cited earlier draw from psychological theories and discuss the importance of providing “discontinuity” from students’ past environment. Based on a body of psychological literature, the reviewers conclude that institutions of higher education are more influential when they offer students a social and intellectual atmosphere that is distinctively different from the home and community backgrounds of the students. Such an atmosphere creates greater discontinuity for students and subsequently improves the chances for enhanced cognitive and identity development. For example, when students encounter novel ideas and new social situations, they are pressed to abandon automated scripts and think in more active ways. By contrast, institutions that have a homogeneous community and replicate their students’ home environment or home community’s social life and expectations are more likely to impede their students’ personal and intellectual development because students are not nearly as challenged in those educationally relevant ways.

In short, due to the ongoing power of race to shape life experiences in U.S. society, racial and ethnic compositional diversity create a rich and complex social and learning environment that can be applied as an educational tool to promote students’ learning and development.

Because a student’s understanding of and willingness to engage in diversity is not assured, which influences whether there is actually what Justice Powell called a “robust exchange of ideas,” all four reviews made clear that a sustained and coordinated effort regarding diversity is necessary to increase the positive effects on students’ development and learning. Research on diversity consistently show that benefits for students do not automatically accrue to students who attend institutions that are, in terms of student or faculty composition, racially and ethnically diverse. Rather, if the benefits of diversity in higher education are to be realized, close attention must be paid to the institutional context in which that diversity is enacted. In other words, it is not enough to simply bring together a diverse group of students. Although this is an important first step in creating opportunities for students to learn from diversity, it cannot be the only step that is taken. Diverse learning environments provide unique challenges and opportunities that must be considered if the learning opportunities that they present are to be maximized.

The cited reviews identified several effective ways to maximize such opportunities for cognitive and personal growth, particularly regarding increases in cultural knowledge and understanding, leadership abilities, and commitment to promoting understanding. Besides bringing diverse students together, campuses must provide stimulating courses covering historical, cultural, and social bases of diversity and community, and must create opportunities and expectations for students to interact across racial and other social differences. Such intentional institutional efforts are critical because it is much easier and less risky to gravitate to and stick with what is most familiar. When students retreat from the rich and complex social and learning opportunities offered by a diverse campus and settle in settings within their institutions that are more familiar and that replicate their home environments, they are more likely to miss out on the added benefits associated with diversity.

One important context for engaging in diversity

is the development of interracial friendships. Studies of friendships on a diverse campus indicate that the outcomes associated with diversity are both realized from and mediated by diverse friendships. According to Antonio (2001), students with a more diverse set of best friends tend to interact more across race outside of the comfort zone provided by their best friends. When they do interact with students other than their best friends, they are more likely to engage in conversations on topics concerned with diversity and difference such as political and social views, racism and discrimination, women's rights, and national politics. Antonio argues that interracial friendships serve the critical function of defining norms of behavior for engagement with diversity.

With respect to the benefits of curricular diversity, a few studies noted in the reviews suggest that the general education curricula, specifically a diversity course requirement, can play a meaningful role in diminishing divisive racial prejudices and subsequently improve race relations. Moreover, such curricular efforts also serve other educational purposes. It turns out, according to the Milem, Chang, and Antonio (2004) review, that reduced levels of racial prejudice are associated both with enhancing students' ability to adapt successfully to change, especially related to demographic and cultural shifts, and with developing students' values and ethical standards through thoughtful reflection of arguments and facts. Thus, reducing students' level of racial bias can be viewed as a rigorous educational undertaking, which requires, according to information-processing models of social judgment, students to actively process new information that conflict with existing knowledge. Besides developing more accurate knowledge, students also learn to think more deeply, actively, and critically when they confront their biases and change erroneous information. Having students think in these ways linked to diversity-related issues not only helps to improve race relations but also promotes other educational interests that are already widely shared and valued by the higher education community.

The effectiveness of campus initiatives and programs to successfully engage students in diversity also depends on a larger institutional context. The importance of this larger institutional context often characterized by the mission and goals of an institution, level of commitment at the highest level of lead-

ership, and permanent organizational/budget integration of key programs and initiatives should not be underestimated. According to almost all of the reviews, the perceived level of institutional commitment to diversity (perceptions that the institution is actively recruiting diverse individuals and promoting multicultural appreciation through campus activity) is associated with perceptions of relatively low racial tension among African American, Chicano, and to some extent, white students. Higher perceived levels of commitment have also been shown to be associated with higher reported college grade point averages and increases in personal goals to promote racial understanding. In contrast, lower levels of perceived institutional commitment to diversity accompanied by higher levels of perceived hostility and discrimination is associated with lower grades for African American students, feelings of isolation among Native American students, a higher sense of alienation among all students, and lower scores on college adjustment and sense of belonging among Latino students. Likewise, white students' perception of hostility or discrimination on campus had both direct and indirect effects on white students' persistence in college and was associated with their lower sense of belonging on diverse campuses.

Given the above conclusions extracted from the reviews, it appears that an institution's overall commitment to diversity is a key factor in determining whether or not students are positively affected. It would seem that students are more likely to perceive greater levels of institutional commitment when campuses enact a more comprehensive diversity approach, as opposed to a piecemeal one. The effects of institutional commitment to diversity may not only affect individual outcomes but is likely to also affect the culture/climate of an institution, which thus further reinforces the benefits associated with diversity.

Some evidence of the type of effect noted above was reviewed by Milem, Chang, and Antonio (2004). They noted that one study showed that even those students who have very little cross-racial interaction yet are part of a student body that has high average levels of interaction tend to report greater individual gains in openness to diversity than those who have the same level of interaction but are a part of a student body that has low average levels. Another study they reviewed found that white

students attending an institution with fewer students of color (less than 10 percent of the total) were 72 percent more likely to participate in the Greek system than white students at an institution with more students of color (more than 17 percent).

Even on relatively diverse campuses, students may view institutional commitment to diversity as weak and, consequently, feel discouraged to interact with racially different others. According to Antonio (2001) the appearance of ethnic clustering or self-segregation on campus is often interpreted by students as a failure of diversity and evidence of a token commitment to diversity by an institution. Curiously, this was perceived not only by students who maintained few interracial relationships but also by those who maintained many such relationships. Since such students regardless of their level of cross-racial contact generally appeared to be discouraged by the climate for diversity fostered by their institution, Antonio concluded that institutional commitment needs to be made highly visible and unambiguous if students are to view theirs and others' interactions with diversity as commensurate with the cultural norms of the campus.

Even though a student's actual engagement with diversity is a more direct and powerful way to realize developmental gains, the above findings also suggest that being in an environment committed to diversity may also contribute to students' self-reported development and choices in campus participation. This emerging body of research indicates that the institutional conditions that promote diversity may by themselves improve positive race relations, irrespective of a student's level of interest in and engagement with diversity. The literature also suggests that high levels of cross-racial interaction among students might well be either linked to or a proxy for a unique campus culture/climate and set of institutional practices, which make it possible for all students to improve knowledge of and ability to accept different races/cultures. This set of linkages, while certainly possible, is an area that deserves greater empirical attention.

IMPLICATIONS OF DIVERSITY BEYOND EDUCATION

Hurtado, Dey, Gurin, and Gurin (2003) assert that the higher education literature identifies a number of important issues that link diversity to student learning, including factors related to individual development and the environments within which students are educated. They indicate that three points have emerged from years of research that has explored these issues. First, individuals who have been educated in diverse settings are far more likely to work and live in racially and ethnically diverse environments after they graduate. Second, individuals who studied and discussed issues related to race and ethnicity in their academic courses and interacted with a diverse set of peers in college are better prepared for life in an increasingly complex and diverse society. Finally, increasing the number of diverse students is essential. However, they also claim that it is just as important for campus leaders to take affirmative steps to create the conditions that maximize both the development of learning and democratic outcomes that can result from being educated in racially/ethnically diverse environments.

If campuses are to maximize the educational benefits that diverse learning environments offer, their institutional leaders must learn to think more systematically and multidimensionally about diversity when they consider the types of policies and procedures that can be implemented. The existing research consistently shows that intentional actions that create meaningful contact between individuals and ideas through the formal curriculum and its implementation, as well as through friendships and peer-to-peer interactions in informal settings, help create the necessary conditions that enhance student learning through diversity. When carefully crafted and nurtured, Hurtado et al. (2003) claim that such diversity-related experiences can help transform the ways people learn not only about issues of equity and justice, but how they approach the learning task itself.

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EDUCATION FROM AN INTERNATIONAL PERSPECTIVE

Because there is no universally agreed-upon definition of “education” or of “international perspective,” it is important at the outset for readers to recognize the meanings assigned throughout this chapter to those terms and to related ones.

Education refers to people’s efforts to improve learners’ knowledge, skills, and attitudes. Thus, parents teaching their children good manners and teachers instructing students in how to read fluently qualify as education. However, children’s discovering on their own how to ride a bicycle or how to solve a picture puzzle is learning, but not the kind of learning that results from education—that is, from intentional instruction.

The expression “international perspective,” as intended here, means comparing nations, societies, and cultures from the vantage points of (1) forms of education, (2) patterns of educational development, and (3) stimulants to development.

A nation consists of a physical territory, the people who inhabit that territory, and the official way the relationships among those people are organized. Rules of organization are usually specified in written constitutions, laws, and regulations. Some organizational rules are not written, but instead are understood by the populace as customs. Nations are identified by such titles as China, the Netherlands, Uruguay, Zambia, Canada, Australia, and Fiji.

A society is a group of individuals living together as a community. Societies can be large, encompassing all humans (as in the expression “human society”), or can consist of all inhabitants of a nation (as in Swedish society and Bangladeshi society). Or societies can be rather small, involving no more than a single region, tribe, city, or village.

The word “culture” refers to the customary way of life shared by a group of people, a way of life that typically includes a common language or dialect and a common cluster of occupations, artistic endeavors, religious beliefs, technologies, and recreational pursuits. Cultures can bear such labels as Navajo, Arabic, Samoan, Latino, Hindu, Basque, Scottish, and Romany (Gypsy). The expression “national culture” refers to those aspects of life shared by essentially all inhabitants of a nation, resulting in what is referred to as French culture in France, Japanese culture in Japan, and American culture in the United States. In addition to the cultural features found in the lives of nearly all of a nation’s residents, subgroups within the population exhibit additional beliefs and practices that are held by a limited number of their compatriots. Thus, within U.S. American culture there are such Native American subcultures as Cheyenne, Chumash, Delaware, Kiowa, Lakota, and Ute. Some cultures bridge national borders. As a result, a variety of countries have groups subscribing to beliefs and practices of Catholic culture, European culture, Spanish culture, Islamic culture, and the like.

With the above definitions of key words in mind, we turn now to the purpose of this introduction, which is to describe in some detail the three vantage points from which the chapter analyzes education around the world: (1) forms, (2) development, and (3) stimulants to development. Following this introduction, the remaining sections of the chapter illustrate diverse patterns that those perspectives assume in different nations, societies, and cultures.

R. Murray Thomas

FORMS OF EDUCATION

All educational efforts, past and present, share at least thirteen components in common. The first twelve are (1) settings, (2) aims, (3) entrance requirements, (4) personnel who are the suppliers of education, (5) learners, (6) things to learn, (7) instructional methods, (8) learning materials, (9) evaluation techniques, (10) behavioral expectations, (11) behavioral consequences, and (12) exit requirements. These elements are combined to form the thirteenth component, a system. What distinguishes one nation's or one society's educational system from another is the particular content of the components.

The nature of each component can be defined by one or more questions, as indicated in the following examples, each of which begins with a defining question and then continues with a few illustrative alternatives of the component in order to show diverse forms the component may assume in different nations, societies, or cultures.

EDUCATIONAL SETTINGS

Defining Question

Where are the learners when they receive instruction, and from what source does the instruction originate? Throughout the world the most popular settings are the home and the school. However, other locations are also used.

Illustrative Alternatives

- Home, instructed by parents
- Home, connected to the computer/Internet
- School classroom, instructed by a teacher
- Church or mosque, instructed by a cleric
- Village green or square, instructed by a teacher

EDUCATIONAL AIMS

Defining Question

What kinds of people are educational efforts expected to produce?

Illustrative Alternatives

The dominant purpose of a particular educational endeavor can be that of producing:

- Patriotic Mexicans
- Devout Buddhists
- Efficient workers for the nation's labor force
- Faithful Canadian citizens
- Well-versed scientists
- Liberally educated British citizens
- Well-behaved Vietnamese

ENTRANCE REQUIREMENTS

Defining Question

What characteristics must applicants display in order to be accepted in an educational program?

Illustrative Alternatives

- Membership in the family that provides the instruction
- A specified age
- A specified gender
- A specified ethnic background
- A particular social class or socioeconomic status
- Adequate test scores
- Specified previous experience

EDUCATIONAL PERSONNEL

Defining Questions

What sorts of people furnish education, what are their roles, and what preparations have they had for their job?

For convenience of analysis, personnel can be divided into three types: (1) those who offer instruction directly to learners, (2) those who indirectly offer instruction to learners via media, and (3) those who furnish support services to the people who directly instruct learners.

Illustrative Alternatives

- Direct instructors: parents, siblings, credentialed teachers, classroom aides, counselors, tutors, classmates

- Indirect instructors: textbook authors, creators of instructional television programs, planners of lessons for the computer/Internet
- Support personnel: school principals, counselors, psychologists, social workers, custodians, school-lunch workers, bus drivers

LEARNERS

Defining Question

Who are the recipients of the educational effort, and where do they receive instruction?

Illustrative Alternatives

- A family's children and youths, taught by parents at home
- Girls and boys, ages two to five, in a nursery school
- Girls and boys, ages five through twelve or more, in an elementary school
- Adults, any age, in a class on basic literacy in the national language
- Soldiers, in a basic training course for new recruits
- Individuals above age five, in a class on computer literacy

THINGS TO LEARN

Defining Question

What knowledge, skills, and attitudes are learners supposed to acquire?

A collection of these "things" is often referred to as the curriculum or the course of study, which can be in the form of one or more of the following alternatives.

Illustrative Alternatives

- A set of textbooks
- A curriculum guidebook
- Teachers' instructional manuals
- A teacher's written lesson plans or lecture notes
- Unwritten information that a teacher has in mind
- Accounts of current events from newspapers, magazines, and television broadcasts
- Suggestions from learners about knowledge and skills they would like to acquire

INSTRUCTIONAL METHODS

Defining Question

What procedures do the providers of education use to help learners master the educational goals?

Illustrative Alternatives

- Lectures
- Question/answer sessions
- Demonstrations
- Textbook reading assignments
- Class discussions
- Group projects

LEARNING MATERIALS

Defining Question

What equipment and supplies are used for promoting learners' progress toward the goals?

Illustrative Alternatives

- Chalkboards and bulletin-board displays
- Pens, pencils, crayons, and writing paper
- Textbooks and reference books
- Radios and television receivers
- Personal computers

EVALUATION TECHNIQUES

Defining Question

What devices are used to assess how well learners are mastering the knowledge, skills, and attitudes that they are supposed to gain from their educational experiences?

Illustrative Alternatives

- Written tests
- Oral recitations
- Homework assignments
- Term papers and individual projects
- Teachers' observations of learners' participation in class activities
- A teacher's overall impression of learners' knowledge, skills, and attitudes

BEHAVIORAL EXPECTATIONS

Defining Question

How are learners expected to act?

Illustrative Alternatives

- Consistently attend school or home-learning sessions
- Diligently complete assignments—no cheating
- Show respect for teachers and abide by their rules and guidance
- Respect fellow learners—do not harm or ridicule them

BEHAVIORAL CONSEQUENCES

Defining Question

What rewards and punishments are used to encourage learners to behave in acceptable ways?

Illustrative Reward Alternatives

- Verbal compliments, in private or in front of other people
- Gifts, money
- High marks or grades
- Certificates, medals
- Accelerated progress to advanced learning opportunities
- Privileges, such as more free time or relief from onerous duties
- Public commendation, as in newspaper articles and award ceremonies

Illustrative Punishment Alternatives

- Corporal castigation—spanking, slapping, caning
- Verbal criticism, ridicule—in private or in front of other people
- Low marks, failing grades
- Removal of privileges, such as a shortened lunch hour or no recess period
- Heavier burden of assignments, as in using additional homework as punishment
- Exposure to public scorn, as in a newspaper article or public assembly
- Expulsion from the learning program

EXIT REQUIREMENTS

Defining Question

What are learners expected to do in order to complete their education experience successfully, and what consequences can they expect for completing it?

Illustrative Completion Requirements

- Exhibit mastery of the knowledge, skills, or attitudes that were taught
- Pass final tests
- Compile enough credits
- Stay in the educational program for a particular length of time

Illustrative Consequences of Satisfactory Completion

- Verbal commendation from teachers
- Written recommendation from teachers
- Certificate, license, or diploma
- A chance to pursue further education
- Employment opportunities

THE EDUCATION SYSTEM

Defining Question

In what manner are the components of an education program linked together in order to help the learners efficiently achieve the goals?

Illustrative System Portrayals

- Organization chart showing components and how they relate to each other
- Written descriptions of each component's duties and powers
- People's unwritten understanding of components' duties and powers

SUMMARY OF EDUCATIONAL FORMS

It should be apparent that the few illustrative alternatives under each of the above thirteen components are only a small number of the different forms each

component can assume. It should also be clear that those forms could be combined in seemingly endless ways to produce the many thousands of specific styles of education found in different societies. The later entry in this chapter entitled “Illustrative Forms of Education” portrays a variety of such styles from different parts of the world.

R. Murray Thomas

PATTERNS OF EDUCATIONAL DEVELOPMENT

No education program remains unchanged as time passes. Instead, every program is in a process of transition. Sometimes the pace of change is exceedingly slow, sometimes moderately rapid, and occasionally very sudden. The term “development,” as intended in this chapter, refers to change in a direction considered to be desirable by the person using the term. The opposite of development is retrogression or deterioration, meaning change that is regarded as undesirable.

Observations of learning programs across the centuries suggest that, even though the rate of change can vary markedly from one place to another, change in virtually all societies moves in a similar fashion—toward greater institutionalization, unification, standardization, diversification, specialization, democratization, secularization, and technological complexity. The word “modernization” refers to the process of societies moving in these eight directions.

INSTITUTIONALIZATION

As societies grow more complex, education becomes increasingly formal and institutionalized. For the purpose of understanding a society’s educational development, a useful distinction can be drawn between life-experience education and formal education. In life-experience education, learners receive instruction as a part of regular daily activities. Instruction is woven into the fabric of normal events, with no separation between teaching and living. Opportunities to provide instruction require no preplanning, because they arise naturally in the course

of ordinary existence. Thus, during daily routines, parents and friends instruct children in how to speak their culture’s language, prepare meals, build shelters, act toward other people, worship gods, adopt health practices, avoid accidents and ill fortune, do their share of the work, and far more.

Formal education, in contrast to life-experience education, involves careful preplanning of what to teach to whom, when, where, and how. Formal education is most often provided to groups organized by age levels and by types of subject matter, with the groups instructed in designated places—schools, colleges, universities—by people trained to be teachers. Learners are expected to participate regularly and diligently in the instructional program.

Within nearly every present-day culture, the education of any child, youth, or adult is an admixture of life-experience and formal education. As time passes, education tends to become increasingly formal. Responsibility for decisions about what to learn, when to learn it, how to teach it, and how to evaluate it gradually shifts away from family members to professionals employed by a government, religious body, or secular foundation.

UNIFICATION AND STANDARDIZATION

As the centuries advance, small societies become united to form ever-larger collectivities, with the cultural differences between the constituent societies diminished in favor of a standardized cultural form common to all members of such a confederation.

When separate communities and regions are amalgamated to form a nation, the nation’s leaders typically encourage or require formal-education institutions to adopt a common system of organization, including common aims and curriculum content. This process does not advance unopposed, because there is always tension between (1) the national leaders’ efforts to standardize the culture, and (2) the individual communities’ efforts to retain their local control and culture. For example, the imposition of a single national language as the medium of instruction in schools can be resisted by cultural groups who favor teaching their children in their own community’s native tongue.

DIVERSIFICATION AND SPECIALIZATION

As a nation grows more modern, education becomes increasingly diversified, with a greater variety of separate programs designed to teach different sorts of knowledge and skills to different learners who play specialized roles in the society.

Village societies referred to as “simple” or “underdeveloped” offer only a few types of occupations, modes of housing and dress, foodstuffs, and forms of entertainment. In contrast, urban societies that are referred to as “modern” or “advanced-industrialized” offer a great host of these elements of living. Consequently, the more modern the society, the more diverse the educational programs needed to prepare efficient producers and consumers of the complex array of services.

DEMOCRATIZATION

As societies modernize and communication among the world’s inhabitants increases, formal education opportunities expand from a selected few learners to a growing proportion of a nation’s citizenry.

In the early stages of any society’s development, formal education is furnished for only a small segment of the population known as the elite. Individuals typically qualify for this prized opportunity by virtue of their family’s position of power in the society. Hence, the children of the aristocracy and the wealthy are the ones who are either tutored or are enrolled in school. In addition, individuals of ordinary ancestry but blessed with special talents (unusual beauty, intelligence, creativity, social skills) may also qualify for elite schooling.

The growing complexity that the process of modernization forces on societies requires that increasing quantities of the citizenry be formally educated. Eventually the entire population is schooled, and the amount of schooling required of individuals increases with each greater degree of modernization. One of the most significant features of modernization has been the rapid improvement in communication facilities, so that people in one part of the world become immediately aware of what is happening in other parts. As a result, social pressure is exerted on less-developed societies to emulate the more modern societies by furnishing ever-more formal educa-

tion to their members, as reflected in the motto of the United Nations’ international schooling campaign “Education for All.”

SECULARIZATION

As societies grow increasingly multicultural, their formal education becomes less religious and more secular in focus.

In virtually all societies, the earliest sponsors of formal education have been religious groups that have used schools to promote their belief systems. Governments—of villages, cities, regions, and nations—in the past have typically trusted the society’s dominant religious group (or groups) to determine who should attend school and what should be taught. However, with the rapidly growing efficiency of international transportation that has resulted from the expansion of modern technology, large numbers of inhabitants of one nation have immigrated to other nations. Consequently, societies that were once dominantly single-faith (all Christian, all Muslim, all Hindu, and the like) have become increasingly multi-faith. As a nation’s minor religious denominations have grown in numbers and political strength, their efforts have resulted in the schools’ aims and subject matter becoming more secular and less religious. Acceptable secular studies include such subjects as language arts, mathematics, history, geography, science, and the arts. However, teaching a particular faith’s doctrine (the contents of the denomination’s holy scriptures) as “the truth” has become increasingly unacceptable, particularly in government-sponsored schools.

TECHNOLOGICAL COMPLEXITY

As societies grow more modern, their educational institutions employ ever-increasing varieties of advanced technology.

In pace with a society’s development, the variety of available teaching methods, equipment, and supplies increases. In all societies, the earliest methods have been oral instruction and demonstration. Learners are told what to believe and what to do, and teachers demonstrate how students should act. These two long-established techniques are not abandoned when new methods and materials are introduced. Rather, the old ones continue in use, supplemented by the

new. Throughout the world, oral instruction—particularly in the form of lecturing a large group of learners—continues to be the most popular mode of instruction, even when other methods could result in more efficient learning. The traditional methods remain in vogue apparently because they are familiar to both teachers and students, are easy to control, and are low cost.

As the centuries have progressed, a wider variety of teaching procedures and equipment has appeared at an accelerating pace. Methods found in present-day schools include lecturing, question-answer sessions, class discussions, small-group discussions, student projects, textbook assignments, role-playing, excursions away from school, demonstrations, exhibits, experiments, interviews with visiting experts, and more. Materials and equipment include chalkboards, bulletin boards, charts, posters, still photographs, textbooks, reference books (encyclopedias, atlases, dictionaries), newspapers, magazines, academic journals, radios, television receivers, audiotape players, video/DVD players, photocopy machines, computers, and others.

The more technologically modern a society, the more types of teaching methods and materials available and the greater the quantity of each type. The most dramatic technological innovations of recent years have been the personal computer and its allied Internet and World Wide Web. The Internet consists of an interconnected array of large computers around the world that hold billions of items of information about all imaginable subjects. That collection is available to anyone who has a personal or institutional computer at hand and a way to connect the computer to a phone line or communication satellite. The number of people taking advantage of the Internet, after its modest beginning in the 1980s, grew at a spectacular pace to include 533 million worldwide in 2001, an estimated 945 million by 2004, and an anticipated 1.46 billion by 2007. The popularity of the Internet has been greatest in the more advanced industrialized nations. Users in the United States totaled 149 million in 2001 and were projected to reach 236 million in 2007. Western Europe had 126 million in 2001 and an expected 290 million by 2007. The most rapid growth was anticipated in Asian and Pacific nations—from 115 million people in 2001 to 612 million by 2007 (Computer Industry Almanac 2002). Large numbers of Internet users have been students in primary,

secondary, and tertiary institutions. To equip students to take advantage of the Internet, rapidly growing numbers of school systems have made computer literacy a required part of the curriculum.

SUMMARY

In the history of every society, education begins entirely as life experience and gradually becomes increasingly formal, institutionalized, unified, standardized, diversified, specialized, democratic, secular, and technologically complex. Today, societies around the world can be found at different stages of development, ranging from complete life-experience education to highly institutionalized formal education. Examples from such societies are offered in the later entry of this chapter titled “Illustrative Patterns of Development.”

R. Murray Thomas

STIMULANTS TO EDUCATIONAL DEVELOPMENT

Stimulants are conditions in a society that encourage education to change in a desired direction. Among numerous conditions that may serve as stimulants, the four inspected in this chapter are colonialism, international comparisons, funding opportunities, and self-perceived needs.

COLONIALISM

The word colonialism refers to intruders from one society gaining political control over another society and seeking to impose the intruders’ culture—including their educational practices—on the conquered population. The most pervasive, worldwide demonstration of this process occurred between the early fifteenth century and the mid-twentieth century as adventurers representing European nations sailed around the globe, capturing ever-larger territories and subjecting the indigenous inhabitants to the colonialists’ rule. The European-type school that was introduced into colonized societies came to be accepted by the local peoples—or at least by an influ-

ential portion of their political leaders—as the “most advanced” or “best” kind. Learners were separated into age groups for purposes of instruction. The age groups formed a hierarchy of grades or classes, with each higher grade offering more complex subject matter than the previous grades. This type—which today is recognized as the world standard—had acquired the following features that were usually unlike the characteristics of the conquered society’s existing forms of education:

- The knowledge and skills to be learned were pre-set for each grade.
- Textbooks and teaching manuals contained the material to be learned.
- Learners were required to attend learning sessions regularly (usually five or six days each week for a set number of weeks).
- Learners’ mastery of the subject matter was assessed by the quality of their written work and their oral responses to teachers’ questions.
- The decision about whether a learner should be advanced to the next higher grade depended on whether the individual had achieved sufficient mastery of the material in the present grade.
- Certificates were awarded to learners who successfully completed a particular series of grades, thereby officially attesting to the learners’ levels of knowledge and skill.
- Teachers were required to be trained and to be certified for their jobs.

Whereas the most massive colonialism efforts were the ones launched by European nations over five centuries, those were certainly not the only instances of educational colonialism. Since ancient times, educational development in conquered territories has typically been affected by practices the intruders introduced.

INTERNATIONAL COMPARISONS

Publicized appraisals of education in different societies can stimulate attempts at educational reform in the societies that show up poorly in the comparisons. This influence of international comparisons on educational development is nothing new. For instance, the typical form that university education in North America assumed in the nineteenth and twentieth centuries was affected by Americans copying the German university

model. However, it was during the latter decades of the twentieth century that the effect of such comparisons grew fastest and most intense as a result of various agencies examining the kind, amount, and quality of education in many dozens of nations. Political leaders in countries that fared badly in the assessments found the results embarrassing, and they moved to effect improvements that would cast their education systems in a better light in future comparisons.

FUNDING OPPORTUNITIES

After World War II, formerly colonized territories in Africa, Asia, and the Pacific Islands gained their political independence and sought to furnish widespread educational opportunities for their populations. To aid with this process, international agencies, philanthropic foundations, and some of the world’s more affluent nations offered money to support selected educational developments in the newly founded nations. In order to receive the proffered funds, the recipient nations were obliged to attempt the kinds of changes that the funding bodies specified. As a result, a host of innovative educational practices were introduced into a variety of societies during the last half of the twentieth century and the early years of the twenty-first.

SELF-PERCEIVED NEEDS

A further stimulus for change is the recognition by educators, political leaders, or the general public that there are flaws in their society’s present educational practices. Consequently, the people in charge of education endeavor to import or create more effective practices.

R. Murray Thomas

ILLUSTRATIVE FORMS OF EDUCATION

As proposed earlier in this chapter, all forms of education share the following components in common: (1) a setting, (2) aims, (3) entrance requirements, (4) personnel who are the suppliers of education, (5)

learners, (6) things to learn, (7) instructional methods, (8) learning materials, (9) evaluation procedures, (10) behavioral expectations, (11) behavioral consequences, and (12) exit requirements. One form of education is distinguished from another by the particular contents of each component and the pattern in which the components are combined to form a system. In this entry, diverse educational forms that result from different permutations of components are illustrated. Each example, rather than depicting education within a specific family or classroom, describes a type of education that can be found in various places. In other words, the examples represent generic forms of education. The sequence of examples advances from the most extreme life-experience type to the most institutionalized type.

EXCLUSIVELY LIFE-EXPERIENCE EDUCATION

The earliest form of education in all societies has been the life-experience type in which children never attend school but are taught exclusively by relatives and acquaintances during normal daily activities. Today that form of instruction is still found throughout the world in communities that have no schools or in families whose children never enroll in school. An estimate of the extent of such education in modern times can be drawn from reports of the incidence of illiteracy in different societies. According to UNESCO (2002), in the following nations during 2002 the proportion of people between ages fifteen and twenty-four that could neither read nor write at a minimal level of skill was 63 percent in Burkina Faso, 55 percent in Iraq, 49 percent in Bangladesh, 29 percent in Egypt, 26 percent in India, 20 percent in Cambodia, 4 percent in Bolivia, 3 percent in Mexico and Vietnam, 2 percent in China, and less than 1 percent in Bulgaria, Cuba, Greece, Poland, and Russia (UNESCO 2002). Therefore, it seems reasonable to conclude that the illiterates in those nations had never attended school or had attended so little that they failed to acquire the school's most basic teachings. In other words, the education of such individuals was acquired entirely through nonschool experiences.

In a typical life-experience setting, the young are taught by a variety of instructors. Mothers, grandparents, and siblings are the child's earliest tutors who

build the young one's foundation of language usage, behavioral expectations, and customs governing interpersonal relations. As the child grows older, relatives and acquaintances provide models of age-appropriate and gender-appropriate conduct. Youths acquire vocational skills while working alongside their parents and neighbors—growing crops, hunting, fishing, building furniture and shelters, fashioning clothing, creating art works, and more. Cultural history is taught by elders telling tales of the past, tracing a family's lineage, and performing traditional songs and dances. The young learn of religion, politics, and community affairs by attending religious ceremonies and public deliberations. And in modern times, television and radio have joined the more traditional means of providing life-experience education.

MINIMAL FORMAL SCHOOLING

One step toward formal education, beyond the life-experience-only form, involves short-term instruction in a limited skill or cluster of knowledge. Such programs are often referred to as “nonformal education” to distinguish them from the long-term, broad-scale instruction offered in a typical school or college. The most popular aim of nonformal efforts is to teach unschooled youths and adults how to read their country's national language. The content of the programs' reading materials often focuses on family planning (birth control or birth spacing), childcare, health, nutrition, or homemaking and cottage-industry skills. Whenever a program is sponsored by a political or religious group, the content is usually designed to promote the group's doctrine and activities.

Instructors in nonformal programs can be of various kinds—trained teachers, students who are still attending a formal school, ordinary members of the community, political party workers, or devotees of a religious denomination. Some instructors are individuals who recently completed the type of nonformal program in which they now teach. Such has been the case of the popular “each-one-teach-one” approach to literacy training that has been adopted in a variety of nations over past decades; each person who is taught to read accepts the obligation to teach another person to read.

Individuals of any age beyond early childhood can be suitable candidates for nonformal programs, and

instruction can be offered in any of a wide range of locations—a school building during the evening hours, a community meeting hall, people's homes, an open village square, a factory after working hours, or a church or mosque.

SECULAR DAY SCHOOLS

By far the most popular form of institutionalized education throughout the world is the secular day school that follows a European and North American model. Learners attend such a school five or six days a week, five to eight hours a day. Their studies usually include reading, writing, mathematics, science, social studies, arts, physical education, and some basic vocational skills. In many countries, the doctrine of a particular religion will be taught during two or three class periods each week, but such schools still deserve the label secular because the curriculum is dominantly nonreligious.

Secular day schools are structured as a sequence of grades, with each grade occupied by learners of approximately the same age. Successfully completing the year's studies at a grade level qualifies students to advance to the next higher grade for the following school year. Learners who fail to complete the present grade's studies satisfactorily are obliged to remain in that grade throughout the following year. During the year, each student's success in every subject-matter field is periodically reported to the student, to his or her parents, and to school authorities in the form of code letters or phrases that distinguish among levels of achievement that extend from outstanding performance to failure.

Most day school systems, designed to serve learners from about age five or six into adulthood, are organized as a succession of three or four major levels that bear such titles as primary, lower-secondary, upper-secondary, and tertiary. The primary (elementary) level usually consists of the first six grades (learners about ages six to eleven), the lower-secondary level (junior high or middle school) involves two or three grades (learners about ages twelve to fourteen), the upper-secondary level (senior high school) has three or four grades (learners about ages fourteen to eighteen), and the tertiary (postsecondary, college, university) requires one to eight or nine additional years' of study (learners ages seventeen to eighteen and beyond). It is apparent, however, that

this general pattern can assume numerous variations in different countries. At a growing pace, the foregoing structure has been extended downward to include learners below age five or six. As a result, kindergartens and nursery schools, which enroll children of ages three to five for half-day or full-day attendance, have proliferated rapidly over the past century.

Learners who complete a school level satisfactorily usually receive a certificate or diploma attesting to their accomplishment.

Because day school students spend only a portion of their waking hours in school, a large amount of their education is acquired outside the school in the form of life experiences. From people in their home and neighborhood, learners acquire much knowledge and many skills. In addition, for centuries books and newspapers have served as influential out-of-school teachers. Then in recent decades, those traditional printed sources have been dramatically supplemented by motion picture and electronic media—films, radio, television, audiotapes, videos, compact discs, and personal computers.

RELIGIOUS SCHOOLS

Thousands of schools around the world, operated by religious organizations, offer instruction focusing exclusively or dominantly on religious doctrine and practices. Some are day schools while others are boarding schools whose students live in dormitories on the school campus. The largest numbers of religious schools are in Asia and Africa. Those in Europe and the Americas—principally at the college or seminary level—are fewer and more often include secular subjects in the curriculum (mathematics, social science, science) than do those in Asia and Africa.

In Islamic regions, religious schools are much alike, focusing chiefly on the faith's holy Koran, other Islamic scriptures, Arabic language, Islamic law, and Islamic customs. Koran schools are known by different titles in different regions—madrasah in Arabic societies, khalwa in the Sudan, pesentren in Indonesia, and pondok in Malaysia. In Hindu India, where the curricula include the study of the ancient Vedas and meditation techniques, such schools are known as ashrams. In Buddhist Thailand they are called wat schools.

Traditionally, most religious schools have not been

organized as a sequence of grades, students have not entered as a group at a particular time of the year, student progress has not been measured by periodic written tests, and diplomas attesting to students' mastery of a body of knowledge have not been awarded at the end of a learning program. However, with the passing of time, more religious schools have adopted certain practices found in European-type secular schools—a grade structure, a defined school year, more secular subject matter, testing, and certificates of completion.

In many parts of the world, pupils not only attend a secular school but also attend one that concentrates on religious studies. Such a pattern of paralleling secular schooling with supplementary religious education appears to have evolved in two principal patterns.

In the first pattern, a traditional religious school system has been largely displaced by a secular public system. The displacement has occurred either because parents have come to judge religious studies as inadequate preparation for youths to progress in a modernizing socioeconomic system or else the government requires that all children follow a curriculum that includes secular subjects not taught in traditional religious schools. Under such conditions, the displaced religious school assumes a supplementary education role, offering its lessons during hours before or after the secular school sessions or on the weekend. An example of this pattern is provided by the present-day *faifeau* (pastor) or catechist schools in the Samoan Islands. The schools were introduced in the mid-nineteenth century by Christian missionaries who established the classes in villages to give the indigenous residents instruction in religious topics and practice in reading the Samoan-language version of the Bible. Eventually such secular topics as geography, history, and arithmetic were added to the curriculum. *Faifeau* schools served as the islanders' chief educational institution well into the twentieth century. Today, *faifeau* classes are conducted for only an hour or two in the early morning or evening or during secular school vacation periods. In Malaysia a similar pattern of development finds pupils attending both a secular day school and a supplementary Islamic pondok.

The second pattern of parallel schooling has developed, not from religious schools gradually being replaced by secular education, but rather from parents' desires to have their children receive system-

atic religious instruction in addition to the secular studies of the public school system. An example is the Jewish supplementary school in the United States, a common form of religious education among the nation's six million Jews. The typical supplementary school meets in the late afternoon twice during the week for an hour or two and on Sunday for perhaps three hours. At the elementary level the subjects of study are Jewish history and culture, the Jewish bible, and Hebrew language. At the secondary level such subjects as Jewish law, ethics, and comparative religion are often added.

BASIC EDUCATION VARIANTS

The expression "basic education variants," as used here, refers to kinds of schooling that differ from the form and content of a society's typical secular day school, especially at the primary level. Over the decades, numbers of such innovative departures have been created and disseminated. Characteristics of such deviations from the usual can be illustrated with five examples: the Montessori system, the Freinet movement, Dewantara's *Taman Siswa*, Waldorf schools, and John Dewey's laboratory school.

The Montessori Method

Maria Montessori (1870–1952), the first Italian woman to be granted a medical degree, became concerned about the education of young children when, as a psychiatrist, her attention was drawn to the plight of retarded children who had been sent to asylums for the insane. Her opportunity to create better ways to educate the young came in 1907 when she accepted the directorship of an experimental school for disadvantaged children in a slum section of Rome. At that site and in similar ones she developed her philosophy of childhood education, along with the teaching methods and materials to implement her novel approach.

From careful observations of the young at work and play, Montessori derived four principles on which to base children's learning activities:

1. Children love order and especially enjoy repetition of actions that they have already mastered.
2. Children prefer work to play and prefer didactic materials to toys.

3. Rewards and punishments are unnecessary to motivate learners.
4. A child has a deep sense of personal dignity that is easily offended. (Standing 1962, 40–43)

In the typical Montessori school, the curriculum is divided into four major parts: motor, sensory, language, and academic, with the first three parts providing a foundation for the later academic studies. Within each part, a highly structured set of materials and activities is required for promoting children's learning progress. Precise directions specify how each activity should be carried out. For instance, to foster very young children's motor development, learners are guided through such practical life exercises as buttoning, tying laces, folding cloth, and keeping the environment orderly—sweeping, washing, and tending plants and animals. To promote sensory development, special materials are provided for refining children's accuracy of sight, hearing, touch, smell, and taste—for example, colored tablets ranging from lightest to darkest, chimes ranging from loudest to softest, and block towers extending from shortest to tallest. Language training consists of an adult guiding the child through three steps that center on the specific language concept of interest at the moment:

1. The quality of concern is named. (The adult says, "This is heavy," and points to the heaviest tablet among several tablets.)
2. The child is expected to recognize the quality. (The adult says, "Give me the heavy tablet.")
3. The child pronounces the correct concept in response to the question, "What is this?"

The academic studies that follow the development of motor, sensory, and language training are the traditional skills of reading, writing, and arithmetic. In promoting these skills, teachers are expected to follow a precise sequence of activities dictated by Montessori's system.

Today the Montessori method is practiced in its original form as sponsored by the Association Montessori Internationale (AMI) and in a revised form sponsored by the American Montessori Society (AMS). The revised variation is more common in the United States, while the original version is more popular in Europe, South America, certain Asian countries, Australia, and Oceania.

After nearly a century since its creation, the Montessori basic education variant has proven to be the most durable of the specialized methods of early childhood education invented in past decades. Although Montessori schools are not required to register with any central authority, many of them are listed on selected Internet websites. For example, one website identifies nearly 4,650 schools in the United States and over 1,900 abroad (Intellect Education Company n.d.). Another website lists fifty-five Montessori schools in New Zealand (Parents Centres New Zealand 2001).

Many of Maria Montessori's innovations—such as activity areas in various parts of the classroom and a wide diversity of learning materials—were radical innovations in the early twentieth century but have since been adopted in regular nursery schools, kindergartens, and primary grades throughout the world.

The Freinet Movement

As a boy, Célestin Freinet (1896–1966) lived in a remote mountain village of Southeastern France until taken into the army during World War I. After the war, embittered and critical of France's social-class system and the nation's rigid schooling practices, he chose to become a primary school teacher dedicated to teaching the poor and dispossessed. At the same time, he saw great hope for the future of humankind in the newly born communism of Russia, a hope that launched his lifelong political identification with the far left.

During the 1920s and 1930s, Freinet refined his pedagogical approach while teaching in a meagerly equipped rural school. In those days, the typical French classroom found the teacher, as the font of wisdom, using lectures to impart the nationally standardized body of knowledge to the learners. Freinet, in contrast, saw the teacher and pupils as cooperative learners, as members of a family who, each day, discussed topics of interest, wrote essays exploring the topics, and used a very simple printing press to publish their writings. There was no memorization of textbook contents or teacher lectures. Pupils served as investigators who engaged in large-group, small-group, and individual learning activities, most of which resulted in some sort of printed product.

Freinet's approach was founded on a series of convictions about the nature of learners and the learn-

ing process that were at odds with the pedagogy of most French primary classrooms. Five such convictions were that: (1) Children are innately curious and display exploratory behavior quite independent of adult intervention. (2) Active exploration in a rich environment, offering a wide array of manipulative materials, facilitates children's learning. (3) Intellectual growth and development take place through a series of concrete experiences followed by abstractions. (4) There is no minimum body of knowledge which is essential for everyone to know. (5) Children will be likely to learn if they are given considerable advice by a teacher in the selection of the materials they wish to work with and in the selection of questions they wish to pursue with respect to those materials.

Such guiding principles and the resulting classroom teaching methods became widely disseminated from the 1930s onward by dint of Freinet's indefatigable writing (letters, books, journal articles) and skillful conduct of workshops and congresses for teachers. Consequently, Freinet's system was adopted as an alternative form of basic schooling by a select number of educators in such nations as Austria, Brazil, France, Germany, Italy, Japan, Poland, and Switzerland, where it is still found today. In each country, the original French version of the approach has been altered to fit into the cultural traditions of the recipient societies.

Dewantara's Taman Siswa

The man identified as the father of modern day Indonesian education was Ki Hajar Dewantara (1889–1959), born into a titled Javanese family and originally given the aristocratic name of Suardi Suryaningrat during the era that the Dutch ruled the Indonesian archipelago as the Netherlands East Indies. The boy's noble origins qualified him to receive a European-type education in a Dutch colonial school. After graduating, he became a journalist who landed in jail for publishing an editorial criticizing the Dutch for celebrating their own independence day while still holding Indonesians in colonial bondage. The colonial government banished Suryaningrat to Holland where he entered a teacher training school that acquainted him with the Froebel kindergarten movement and European educational methods. Upon returning to his homeland several years later, he shed

his aristocratic name in favor of Ki Hajar Dewantara so as to identify himself as a teacher and an active proponent of Indonesian nationalism. In 1922 he founded the first Taman Siswa (Pupil's Garden) school, which developed into an entire system of schools distributed throughout Java and neighboring islands.

The purpose of Taman Siswa was to furnish indigenous Indonesians an education that combined the subject matter of European schools with strong elements of traditional island culture (local languages, arts, personal/social values, history, literature) within a family-like classroom atmosphere. Dewantara introduced the then-novel concept of *tut wuri handayani*, allowing students to develop at their own pace, each according to his or her own nature. The teacher, assuming the role of *pamong* or guide, observed and led from behind. Emphasis was also placed on a key practice in Indonesian village social life called *gotong royong*—cooperative effort for the good of the group.

An important purpose behind Taman Siswa was to give Indonesians access to the same opportunities, professionally and socially, that Dutch citizens enjoyed at that time. This was done by carefully monitoring the quality of education at Taman Siswa schools, a quality that had to be at least equal to that of the best Dutch-colonial schools.

When indigenous Indonesians won independence from Holland's rule during the period 1945–1949, Dewantara became the new nation's first minister of education. Today Taman Siswa schools continue as both a basic education and higher education alternative to public secular schools and religious schools.

Waldorf Schools

In 1919, the owner of the Waldorf-Astoria cigarette factory in Stuttgart, Germany, invited an Austrian philosopher, scientist, and artist named Rudolf Steiner (1861–1925) to give a series of lectures about childhood education to the factory's workers. The owner was so impressed by the lectures that he asked Steiner to start a school for children of the factory employees. Steiner accepted the offer and, after training teachers, opened the Free Waldorf School (*die Freie Waldorfschule*) on September 7, 1919. Steiner's school thrived and led to the establishment of others in Europe. The first Waldorf school in the United States

opened in New York City in 1928. By the early years of the twenty-first century, there were 600 Waldorf schools in thirty-two countries (125 in North America) serving more than 120,000 students enrolled in kindergarten through upper-secondary school.

Steiner reported that by virtue of his special spiritual insight into the nature of children, he recognized that each human was comprised of body, spirit, and soul. He believed children advance through three seven-year stages and their education should be appropriate to the spirit of each stage. He saw birth to age seven as a period for the spirit to adjust to being in the material world. At this stage, children best learn through imitating adult guides and having academic studies held to a minimum. The young were to learn about the alphabet and writing in first grade at around age six, and they were to hear constructive fairy tales but do no reading until second or third grade.

The second stage of growth, from ages seven to fourteen, Steiner saw as a time for the development of imagination and fantasy under the direction of the same teacher throughout the eight years, with the teacher fostering a family atmosphere in which the teacher would be the authoritative parent. Steiner contended that pupils learn best during this stage by accepting and emulating an authority. On the assumption that young children profit little from lectures, all subjects in the early grades were introduced through pictorial media—drawing, music, dance, dramatics. Rather than use textbooks, pupils in the lower grades develop “main lesson” workbooks in which they recorded their experiences and what they have learned. Textbooks would be introduced in the upper-elementary grades to supplement the learners’ main lesson books.

The assessment of a child’s progress at the end of the school years would be in the form of a detailed description in which the teacher writes about the child’s behavior and learning performance. No letter grades or number grades would be assigned.

Today, Waldorf schools strongly disapprove of pupils using television and computers, because of the undesirable content of so many television programs, Internet websites, and computer games and because such media place users in an inactive physical mode. Watching television is also believed by Waldorf teachers to hamper children’s imagination—an intellectual function considered central to the healthy development of the individual.

John Dewey’s Laboratory School

Each of the basic education variants discussed so far produced multiple schools of each variant, schools that continued to operate into the twenty-first century. But such was not the case with our fifth example, the experimental school that John Dewey (1859–1952) and his wife, Alice Chipman Dewey, established in 1896, with twelve pupils and two teachers in a private house in Chicago. That modest innovation would soon become the University of Chicago Laboratory School, which was directed by John Dewey until he moved to Columbia University in New York in 1904. The original laboratory school continues today on the University of Chicago campus as a multi-level institution (nursery/kindergarten, primary, secondary), enrolling around sixteen hundred students. However, it did not spawn a system of Dewey laboratory schools in other places. Instead, the philosophy and practices of the original school would permeate a substantial portion of American education, particularly as expressed in the progressive education movement that played a dominant role in school reform in the United States from the 1920s into the 1940s. Dewey’s philosophy and teaching methods would also be adopted by educational reformers in other nations.

Dewey criticized traditional schools for centering their attention on knowledge collected in the past and “imposing” that knowledge on young children who found it meaningless and detached from the concerns of their own lives. To correct what he saw as a flawed approach to teaching, he proposed six changes in educational principles (see Table 21.1). Guided by these revised principles, teachers would adopt new learning activities (see Table 21.2).

Although Dewey’s proposals did exert notable influence on practices in many schools in the United States—particularly in kindergartens and the primary grades during the 1930s—old teaching methods still continued to dominate the nation’s education system. In the early years of the twenty-first century, traditional textbooks and drill techniques grew especially strong as renewed emphasis was placed on statewide and nationwide achievement testing in reading and mathematics. Schools faced by punitive government sanctions if students’ test scores were below national standards increasingly “taught to the test,” and so heavy emphasis

Table 21.1

Dewey's Six Educational Principles

From	To
Imposition from above by adults	Expression of individuality
External discipline	Free self-motivated activity
Learning from texts and teachers	Learning through direct experience
Acquiring isolated skills by drill	Acquiring skills through pursuing self-chosen goals
Preparing for a remote future	Making the most of present-life opportunities
Static aims and materials	Acquaintance with a changing world

Source: Adapted from John Dewey, *Experience and Education* (New York: Macmillan, 1938): 5–6.

Table 21.2

Learning Activities Associated with Dewey's Six Educational Principles

From	To
Lecturing children	Group discussions to discover and stimulate children's interests
Textbooks	Many hands-on materials for learners to investigate, sites to visit, and people to interview
Written and oral tests	Teachers' observations of children's behavior and work products
Assigning all class members the same tasks	Adjusting learning activities to each child's developmental level

Source: Adapted from John Dewey, *Experience and Education* (New York: Macmillan, 1938): 5–6.

was placed on drill, with little regard for individual differences in ability among students.

DISTANCE EDUCATION

In distance education, teachers are in a different location than the students, often separated by hundreds of miles, so that they correspond with each other via such media as the postal service, radio, television, or the Internet. Distance learning includes many of the features of formal classroom instruction (aims, curriculum content, homework assignments, the awarding of completion certificates) except that in distance learning the source of instruction is not in the same place as the learners and the teaching methods and materials can differ somewhat from those used in classrooms.

Formal distance-learning programs began in both the United States and Europe in the mid-1800s, with students and their instructors corresponding by mail. A teacher at a distant site posted reading materials and assignments to students, who completed the required tasks and mailed the results back to the instructor. Since the middle of the twentieth century, new media (radio, television, audiotapes, videos, the

Internet) have joined postal correspondence to greatly enhance the scope and efficiency of distance learning.

Students choose to enter distance-education programs because they find it impossible or inconvenient to attend a traditional school or university. For example, ill health or the demands of childcare may require that students stay home, or they may live far from a suitable school, or their working hours may prevent them from being in class regularly. To succeed with distance learning, students need to be strongly motivated, diligent, and well organized, because no teacher is present to monitor their activities.

Distance education is most popular at the postsecondary level. A 1980 study of distance-teaching universities in ten countries revealed that most learners were (1) in the age range of twenty to forty years, (2) engaged in part-time study at home, and (3) from less-privileged, urban social groups. The best-known of the tertiary-level distance learning institutions has been the British Open University, which began in 1971, offering instruction via radio, television, books, postal correspondence, audiotapes, videotapes, and, most recently, the Internet. By 1983 there were 95,000 students, a number that rose to more than 200,000 by

the year 2000, when over 24,000 lived outside the United Kingdom. By 2003, more than 220,000 individuals had earned degrees. Nearly all students were enrolled part-time, with 70 percent of undergraduates remaining in fulltime employment throughout their studies. There have been no entrance requirements for undergraduates. Around one-third of students in undergraduate studies have had less than the qualifications required for entering most universities; nearly 70 percent of such students have successfully completed their courses each year. The British model has been widely copied throughout the world.

Over the past decade, distance-education programs have expanded rapidly as a result of the public's widespread use of personal computers and the Internet. The Internet equips instructors to place information on websites (text materials, lecture notes, photographs, charts, speeches, music) that are accessed by learners at any time from any distance. Students can submit written assignments to instructors via electronic mail (email) and, in return, receive their instructor's emailed appraisals of the assignments. In addition, Internet chat groups permit learners to conduct discussions with fellow students who are in distant locations. Universities have increasingly replaced or augmented classroom instruction with so-called cyberclasses that substitute cybernetic or electronic media for in-class teaching. Cyberclasses enjoy a variety of advantages—the number of learners served is not restricted by classroom capacity, learners can attend lessons at times and in places they find convenient, and the funds needed to mount and maintain cyberclasses are only a small fraction of the expense of building and maintaining a school or university campus.

VOCATIONAL EDUCATION

Vocational education involves preparing people for the world of work, that is, preparing them to “make a living” by creating products and providing services for themselves and for members of both nearby and distant societies. The two most distinctive features of vocational education are the kinds of knowledge and skill that are the focus of instruction (the curriculum) and the sites in which instruction often take place.

Some educators distinguish between vocational education and vocational training. They define vocational education as the process of equipping learners with knowledge, skills, and habits applicable in

a variety of occupations. Such knowledge can include understanding scientific principles (physical and behavioral sciences), ways of collecting information about a topic of interest (research techniques), and ways groups can be organized to pursue some goal (social structures). Important skills are those of reading, speaking, writing, and calculating. Habits include getting to work on time, carrying out assignments diligently, and maintaining amicable social relationships with fellow workers. In contrast, vocational training is defined as instruction in the exact knowledge, skills, and habits needed to perform a specific job effectively—operating a lathe in a machine shop, preparing food in a restaurant, caring for plants in a nursery, designing buildings in an architectural office, creating computer programs, selling insurance, and the like. The more general vocational education is typically provided in regular day schools, whereas subsequent vocational training is furnished in special vocational schools and on-the-job apprenticeships.

The sites at which vocational studies are pursued can vary from one program to another. Historically, the earliest form of vocational training involved youngsters learning to become workers by first watching their parents and neighbors do jobs, then gradually taking on the tasks that those jobs required. Much present-day vocational education is still of this in-family variety in dominantly agricultural and cottage industry societies. However, as nations industrialize, in-family training systems become increasingly unsuitable, so vocational studies move to schools and to on-the-job locations.

Formal vocational programs can assume various patterns for providing education and training, as illustrated by three popular types:

1. *Specialized Vocational Schools.* At the secondary school and postsecondary level, schools are established to prepare workers for particular occupations. The curriculum in such institutions is typically a combination of general studies (language arts, physical sciences, social sciences) and the knowledge and skills required for a limited cluster of occupations, such as agriculture, the construction trades, electronics, merchandising, home economics, mechanical trades, business practices, the arts, and more.

2. *Vocational Tracks.* The term “comprehensive school” refers to a secondary school that includes

alternative tracks that students can follow, with the tracks bearing such titles as math/science, social sciences, literature/languages, business, industrial arts, and home economics. Students in each track follow a combination of general studies (reading, writing, speaking, basic mathematics, social studies, physical education) and of studies specific to the occupational focus of their particular track.

3. *School-and-Work Combinations*. In a secondary or postsecondary institution, learners may divide their time between school classes and on-the-job training. They may spend the morning hours in school studying the language arts, science, social studies, mathematics, and the arts. Then in the afternoon they may work on a farm or in a business office, factory, primary school, or other worksite related to their vocational goal. In another version of school-and-work, students spend half of the school year in class and the other half as an apprentice on a job site. This model is often referred to as the dual system.

Nations rarely limit vocational education to only one of these three approaches. However, they may place far greater emphasis on one model than on another. In Germany, the dual system has been the most common model, with apprentices and job trainees spending three or four days a week in the work place and one or two days attending classes in trade schools (*Berufsschulen*). Usually about 40 percent of their schoolwork has been in basic academic subjects, such as languages, mathematics, and sciences, and about 60 percent in subjects directly related to their chosen professions. In 2000, about 1.65 million secondary school students were enrolled in trade schools, or about two-thirds of all youths of secondary school age (Cockrill and Scott 1997).

In Japan, most upper secondary schools have offered academic programs that prepare students for higher education and do not offer vocational courses. Therefore, most Japanese students who have participated in vocational courses have attended vocational schools. During the 1990s, over one-quarter of upper-secondary school students were in vocational education classes.

Specialized vocational secondary schools and dual-system programs have been rare in the United States. Vocational courses have been provided mainly in comprehensive schools, but enrollment in vocational classes declined markedly in the final decades of the

twentieth century. Although nearly all public high school students were taking at least one vocational preparation class by the 1990s, only eight percent specialized in vocational subjects, with most of those students in business or trade and industry fields. Thirty-two percent of public high school attendees were in a college-preparatory track, while the remaining 60 percent had no specialization (National Center for Education Statistics 1992).

In nearly all of the world's modernizing societies, technological innovations over the past eight or ten decades have changed the time during people's lifespans that they engage in vocational studies. In the more distant past, the kinds of occupational skills individuals learned by age twenty or twenty-five would usually be the kinds they would need throughout their working life. Whatever upgrading they might require with the passing years could be obtained through experience on the job. But increasingly rapid technological change and the discrepancies in labor costs from one nation to another (costs that move labor-intensive tasks out of more industrialized societies into less developed ones) have found many people in industrialized countries forced to change their occupations as the nature of the job market changes. Individuals who lose a job because their existing skills have become outmoded are obliged to acquire new knowledge and skills. Thus, vocational preparation has increasingly become a lifelong pursuit, with workers periodically needing to retrain or upgrade in order to fit into the job market.

SPECIAL EDUCATION

The expression "special education" is commonly used to identify programs intended for learners who suffer a degree of disability that requires extraordinary provisions if they are to become adequately educated. The most common types of disability for which special education is designed are disorders of sight, hearing, speaking, physical movement, thought processes, and behavior. In addition, students who display extraordinary talents—that is, gifted learners—are sometimes also included under the term special education, and provisions are created for nurturing their unusual abilities.

The four main ways that schools treat students who have disabilities are: (1) excluding them from formal schooling, (2) assigning them to special schools

or classes, (3) dividing their time between special classes and regular classes, and (4) assigning them to regular classes.

Exclusion

In societies that have high rates of illiteracy because they have been able to enroll only a limited proportion of their children in school, there is little or no provision for educating the handicapped. Learners who suffer marked disabilities are simply excluded from formal education.

Special Schools and Classes

As societies grow increasingly modern and schooling is extended to a greater proportion of the citizenry, schools intended for students with specific types of handicaps are established, initially by private philanthropic and religious groups and later by the government. Thus, there can be a school for the sight impaired (blind and partially sighted), another for the deaf and mute, and a third for the mentally retarded. Or, rather than a special school, there may be, within a regular school, one special class for the handicapped, with the members of the special class rarely if ever expected to mingle with students from regular classes.

Special Plus Regular Classes

In recent decades, and especially in advanced industrialized societies, the number of special schools has diminished as educators have sought to integrate handicapped students into the general schooling population. The rationale behind this effort has been that the hearing impaired, sight impaired, lame, and mentally handicapped are in many respects much like their nonhandicapped age mates and, therefore, the handicapped should learn to live amicably with those age mates, and vice versa. Thus, for those parts of the regular school program in which disabled children can participate satisfactorily, they should be in the same classroom as their nonhandicapped schoolmates. Whenever the disabled need unusual forms of instruction (such as the blind learning Braille and the mentally slow receiving extra help with reading simple material), they can be withdrawn from the regular class and scheduled for instruction in a special class or with a tutor.

Regular Classes

The final version of integrating the handicapped into the school life of the regular population of students is typically called complete immersion or mainstreaming, a practice that consists of placing handicapped pupils fulltime in a regular classroom. The classroom teacher is then expected to make whatever adjustments in the learning program as might be necessary to accommodate the learning needs of the disabled. Advocates of mainstreaming usually support their position with a democratic-right argument, contending that the handicapped have a right to be educated in the same setting as their unimpaired age mates. Opponents of mainstreaming have argued that a principal motive behind the complete integration of the handicapped into the regular classroom has not been philanthropic but, rather, economic—the desire to save funds that would be required for special facilities and special teachers. Regular classroom teachers have objected to full-time immersion because of the time and special skills required to adequately educate the handicapped in a classroom of nondisabled learners.

HOME SCHOOLING

The term *home schooling* typically refers to individuals pursuing a formal course of study at home under the direction of a parent or tutor, or under the learner's own self-direction. The curriculum content of home schooling is most often identical to—or similar to—that of formal schools.

Students or their parents may choose home schooling for various reasons. Learners' health problems may prevent them from attending a regular school, or perhaps their family lives in a remote region with no school nearby. Or the family is either traveling or living temporarily in a foreign country whose language and curriculum differ from those of the learner's home culture. Or else the student or the parents are dissatisfied with the quality of teaching or pace of instruction in the local school, so they believe the student will progress more satisfactorily at home. Parents may disagree with the school's curriculum content, or they may believe that other children who attend the school are ill behaved and potentially a bad influence on their own child. Furthermore, among young adults who are employed,

home schooling offers the opportunity to pursue systematic study that fits one's work schedule.

Nations or states that maintain and enforce compulsory schooling laws typically regulate the conditions under which individuals or groups conduct home schooling. For example, in California, where full-time education is required of all individuals between ages six and eighteen, a parent can qualify as a private tutor by earning a state teaching credential. Any organization that conducts home schooling in California in the form of a private school must file an annual report describing the organization's location, faculty, curriculum, and administrative procedures. The Canadian province of Quebec excuses a student from attending a public school if the school board judges that the learning experience provided at home is equal to that offered in school. In Germany there are no laws that specifically allow for home schooling, although each province gives school officials some discretionary authority to approve alternative education.

The extent of home schooling varies greatly from one nation to another. In the early twenty-first century, nearly one million children were home schooled in the United States, compared with an estimated 400 families in Germany, and 600 to 800 families in Japan. The differences among countries in the proportion of the school-age population being taught at home have been attributed to such factors as parents' disappointment with the public schools' curricula or efficiency, the extent to which governments permit home schooling, types of home schooling programs available, and parents' educational backgrounds.

FULL-TIME RESIDENTIAL SCHOOLS

In the most extreme version of institutionalized education, learners not only attend a school's classes, but they live at the school twenty-four hours a day, seven days a week, leaving the campus only occasionally for short periods of time.

Such residential or boarding schools are not a recent invention but have existed for many centuries in nearly all parts of the world. Thus, full-time residential schools are not the logical final stage of the modernization trends described earlier in this chapter. Instead, such schools typically represent a longstanding tradition of wealthy, upper-class parents placing their children's education entirely in the hands of profes-

sionals, with the hope of furnishing their offspring a prestigious type of schooling in the company of classmates from similar social-class backgrounds. The students are taught the knowledge and skills that well-educated aristocrats are expected to display.

However, not all boarding schools have been intended for children from upper-class homes. Instead, boarding schools have often been designed to impose a colonial society's culture on children of a colonized population. Such was the case in Canada when British and French colonialists, from the sixteenth century into the twentieth century, gradually settled in regions that had been the homelands of American Indians and Inuits. Before the mid-1800s, four Christian denominations (Anglican, Catholic, Presbyterian, and United Church of Canada) had conducted a few residential schools for children from the indigenous tribes. Then the rapid proliferation of such schools began with the issuance of the colonial government's *Gradual Civilization Act of 1857*, authorizing the use of public funds to support boarding schools whose purpose was to "civilize" the native population by teaching English and other features of European culture, including Christian religion. Under government funding, the relatively few residential schools operated by Christian churches increased to fifty-four by 1898, to seventy-four by 1920, and to a high point of eighty-one by 1946. Between 1840 and 1980, an estimated 125,000 Indian children attended a residential school. By the 1960s, the Canadian government and church authorities had become sensitive to the charge that the residential schools had physically and psychologically damaged a great many students and had decimated the ancestral culture of all who attended. As a result, the last of the church-sponsored boarding schools was closed in the 1980s.

R. Murray Thomas

ILLUSTRATIVE PATTERNS OF DEVELOPMENT

In this chapter's introduction, educational development was viewed as progressing toward greater institutionalization, unification, standardization, diversification, specialization, democratization, secu-

larization, and technological complexity. The following cases exemplify patterns that such development has assumed in a variety of societies.

INSTITUTIONALIZATION

Institutionalization is basically the process of the adults in a community assigning schools the responsibility of educating the community's children and youths. The process, in effect, involves shifting at least part of the training of the young from the family and neighborhood to formal institutions operated by people who specialize in teaching. The trend in all societies has been toward continually increasing the aspects of life and the percentage of the population that are institutionalized. The expression "aspects of life" refers to which kinds of skills and knowledge the schools are assigned to teach. For example, are the young not only expected to learn reading and calculating in school, but also to receive instruction in sexual behavior, religious doctrine, recreational activities, etiquette, and more? The expression "percentage of the population" refers to those who, among the community's inhabitants, are to be served by the schools. For instance, is the institutionalization of education limited to the wealthy who are able to pay high school fees? Or is schooling intended for everyone between ages six and sixteen? Or is it for all males between ages two and twenty? Or for anyone, irrespective of age or gender, who wishes to pursue formal study of whatever topics he or she chooses?

International comparisons of schools' curricula (aspects of life) and enrollments (percentage of the population) show that there are marked differences in the degree of institutionalization from one nation to another.

The following examples illustrate progress toward institutionalizing education in various regions of the world over recent decades and suggest what more would be needed if widespread formal education was to become a reality in all countries.

First, consider forty-four Asian and Pacific Island nations. Between 1990 and 2000, the number of children in primary schools in those countries kept ahead of the growth rate of the school-age population as 401 million more children attended primary classes in 2000 compared

to 331 million in 1990. The largest gain was in nursery schools, kindergartens, and day-care centers, which grew by 50 percent to 47 million children (Manzo 2001).

Less encouraging were the primary-school attendance figures in thirty-two other countries, ones at grave risk of failing to provide a basic education for all their school-age children by 2015, when an estimated 156 million children around the world may not have access to schooling unless far greater investment is made in expanding formal education (Manzo 2001).

Gender disparities in school enrollment rates were particularly acute by 2000 in nineteen Arab countries—Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates, and Yemen, as well as the Palestinian Autonomous Territories. The region's total population was 270 million, with 39 percent below the age of fourteen. Of the eight million primary-school-age children not in school, five million were girls. Gender parity (equal enrollment rates among boys and girls) had only been achieved in the Palestinian Autonomous Territories, Bahrain, Jordan, Lebanon, and the United Arab Emirates. Djibouti was at the bottom of the ladder for enrollment, with only 30 percent of its primary-age children in school. Djibouti also had the biggest gap between enrollment rates of boys and girls in primary school, with only slightly more than 35 percent of primary age boys in school and just over 26 percent of girls. (Education in the Arab States 2003)

UNIFICATION AND STANDARDIZATION

The term unification refers to individual schools or school districts uniting to form larger integrated school systems. Standardization refers to the administrative and teaching practices in schools becoming increasingly similar as unification takes place. How these phenomena can operate is illustrated in the following paragraphs with the United States as the example. Although the general trend of formal schooling has been toward greater unification and standardization, the trend has not gone unchallenged. In the late twentieth and early twenty-first

centuries, school systems in various parts of the world experimented with decentralization by transferring decisionmaking power from a central authority to individual school districts and schools. The case of New Zealand illustrates a typical decentralization effort.

Unification in the United States

The credit for introducing tax-supported public schooling in North America goes to the Massachusetts Bay Colony where, in 1647, the settlers passed the continent's first compulsory-education law. The legislation required every town of at least fifty families to establish a primary school. Each town of one hundred families was obligated to open a grammar school to provide secondary education. Soon, all of the other New England colonies, except Rhode Island, adopted similar legislation, thereby setting the pattern eventually adopted for public education across the entire country. That pattern involved dividing every colony into school districts, with each district governed by an elected school board of citizens responsible for setting school policy, providing a building and equipment, and hiring teachers. Public schooling was financed chiefly through tax on real estate within the district. The size of a primary-school district was typically determined by how easy it was for pupils to reach school, which usually meant a school within walking distance. Over the following decades, as more immigrants arrived from Europe and moved west, the New England schooling plan moved with them. The same pattern would later be adopted in the southern colonies as well.

When the colonies became self-governing as the result of the American Revolution, the framers of the U.S. Constitution assigned no powers over education to the federal government. Matters of education were left to each state. During the nineteenth and twentieth centuries, local school boards continued to determine the nature of schooling within their districts, but state legislatures, at an increasing pace, gained influence over school districts by passing laws bearing on school administration, curricula, textbooks, teacher certification, compulsory pupil attendance, and more. The most influential method state officials used for imposing their will on the traditionally independent school boards was to furnish money to districts that met the state requirements.

Thus, as the decades advanced, districts became more and more dependent on state funds for operating the schools, and within each state the schooling practices in districts grew increasingly alike as districts adjusted to the state requirements.

A further impetus toward unification during the twentieth century was the improvement in transportation—most notably, the introduction of the school bus. When pupils could ride the bus and no longer had to depend on walking or the family buggy to reach school, several districts could consolidate and thus afford to construct larger buildings, offer a greater variety of services, and enjoy the administrative economy of increased size. As the consolidation of districts advanced, the conduct of schooling grew increasingly standardized, with a single set of rules now governing school practice in what had previously been smaller independent districts. Over a seventy-five-year period, the number of separate school districts in the United States declined from around 130,000 in 1925 to 16,850 in 2000. (Goldin 2003)

As a result of the unification movement in the twentieth century, school districts varied dramatically in size. By 2000, the 16,850 public-school districts throughout the nation included 94,090 schools that enrolled 47.7 million students. The 100 largest districts comprised less than 1 percent of all districts but served 23 percent of the nation's public elementary and secondary students. The 500 largest districts made up 3 percent of all districts but 32 percent of all schools, serving 20.4 million students or 43 percent of the country's total public elementary and secondary enrollment. Seventy-one percent of the nation's districts had fewer than 2,500 students, while each of the 100 largest school districts had at least 45,000 students. The largest district was that of New York City, with 1,075,710 students attending 1,207 schools. The second largest was Los Angeles, with 710,007 students in 655 schools. The enrollment in New York City and Los Angeles together was greater than that of twenty-seven individual states combined (National Center for Education Statistics 1999/2000).

Prior to the mid-twentieth century, the U.S. federal government had played an extremely small role in schooling. But that all changed in 1965 when Congress passed the *Elementary and Secondary Education Act* (ESEA) authorizing federal monies to support educational activities that compensated for

educational deficits in the lives of the nation's poor and minority children. After 1965, the law was revised every five to seven years, obligating the states to carry out an ever-increasing range of educational prescriptions. By 2002, when President George W. Bush signed into law the most recent version as the *No Child Left Behind Act*, the ESEA catalogue of provisions filled three volumes containing over five thousand entries. The provisions now covered a multitude of populations and topics, including: bilingual education, migrant education, Native American education, Native Hawaiian education, Native Alaskan schooling, neglected and delinquent youth, education in corrections facilities, technology, math and science, libraries and media, violence prevention, safe and drug-free schools, women's equity, magnet schools, foreign language in elementary schools, gifted and talented children, arts education, charter schools, education-improvement activities (training, innovation grants, model demonstration grants, higher education), midnight basketball, gun-free schools, tobacco-smoke-free environments, and a host of additional matters ranging from improving materials and textbooks to maintaining and constructing school buildings (Signetwork n.d.).

The most prominent feature of the 2002 ESEA update was a nationwide achievement-testing program in reading and mathematics, with tests in science soon to follow. States were told to set score levels that schools were to reach if they were not to be designated as "failing schools." The government urged states to pass legislation offering cash vouchers to parents who wished to send their children to schools outside the local district, including private schools sponsored by religious organizations. As a result, federal expenditures on education reached a new high in 2003, when twenty-two billion dollars were authorized for implementing that year's updated ESEA programs (Robelen 2002).

Because the federal government had no constitutional authority over education, federal officials adopted two principal strategies for compelling states to abide by ESEA legislation: (1) furnishing large amounts of funds to states that complied with federal education legislation, and (2) publicly embarrassing states and school districts that failed to comply.

In conclusion, by the early years of the twenty-first century, the unification and standardization of schooling in the United States had come a long way from

colonial times, with the process continuing at a rapid pace. However, at the same time, pressure was being exerted by a variety of states and school districts to relegate more decisionmaking to local authorities. The result was a growing dialectical confrontation between centralization and decentralization forces.

Decentralization in New Zealand

Educational decentralization consists of devolving decisionmaking responsibility from a central authority (such as a national government's ministry of education) to local authorities (such as cities, towns, or school districts).

There are various reasons that people propose to decentralize educational functions. Sometimes the primary motive is political, with decentralization representing an attempt by central government officials to pacify regional political powers that threaten the unity of the national state. In this instance, the central government relinquishes a measure of educational decisionmaking to local bodies as a symbol of the central authorities' respect for the rights and competence of regional leaders. In other cases, decentralization is a means of freeing the central government from responsibility, as can occur when the funding of schools is delegated to local governments. In still other instances, the purpose is to enhance the efficiency of the education system by improving the speed and accuracy of communication, of reaching decisions, and of implementing decisions. A fourth motive can be that of adapting education services to the unique needs of different communities. A fifth can be to engage people at the grass roots of society in assuming responsibility for schools in their own community rather than depending on the central government.

The New Zealand government in 1989 launched a massive decentralization program that altered how decisions were reached about most matters affecting the schools. The expressed motives behind the change were to increase administrative efficiency, to improve school attendance rates, to accommodate regional and minority groups' needs, and, in doing so, to improve the quality of student achievement. However, critics charged that the plan was actually an attempt by the government to solve its current legitimation problem (the country's unhappy economic condition) by devolving the most intractable educational responsibilities to the individual schools while still main-

taining central control over policy, basic curriculum requirements, minimal funding, and the monitoring of school performance (Nash 1989).

Before the decentralization plan was adopted, all manner of decisions about the operation of primary schools passed from the central Department of Education Head Office, through a regional office, through a subregional education board, to a school committee, and finally to the individual school. With decentralization, the Department of Education and bureaucracy of suboffices and boards was replaced by a Ministry of Education and, for each school, a board of trustees that included parents among its members.

Responsibilities removed from the Department of Education and assigned to individual schools included those of: (1) defining, in the form of a charter, the relationships between each school and its community as well as specifying learning objectives for each grade level, (2) setting the school's budget, (3) selecting staff members, (4) setting each staff member's pay above a nationally determined minimum level, (5) evaluating the performance of staff members, (6) hiring and firing the principal, teachers, and auxiliary personnel, (7) ordering and maintaining facilities and supplies from whatever sources local authorities deem appropriate, (8) hiring consultants, and (9) ensuring that parents abide by the compulsory-schooling regulations. The New Zealand plan included a parent-choice provision that permitted parents to send their children to any school they preferred rather than being limited to the school closest to the family's residence.

Functions that would remain in the hands of the central authority included those of (1) formulating broadscale national policies to foster educational equity (for females, the indigenous Maori population, Pacific Islanders, and other minorities), (2) defining codes of conduct for individual schools' trustees and principals, (3) setting nationwide curriculum objectives, (4) funding schools on the basis of nationally determined formulae (providing each school a bulk grant plus teachers' pay), and (5) periodically assessing a school's performance by means of a newly created education-review office (Picot 1988; Charter Framework 1990).

In 2000, an appraisal of the New Zealand plan during its first decade of operation led researchers Edward Fiske and Helen Ladd (2000) to conclude that the change led to greater managerial efficiency, parental satisfaction, and student achievement in

many of the high-performance schools but left poorly performing schools—whose students were mainly from socially disadvantaged minorities—in worse condition. Three lessons that Fiske and Ladd drew from their assessment were that:

1. *Reform is always in process.* As soon as a “solution” is implemented, problems occur. Better schools require a constant process of tinkering and reform.
2. *Reform requires trade-offs.* Improving educational equity, strengthening parent choice, fostering school self-governance, and minimizing costs are all great goals, but working toward one goal may undermine the others.
3. *Reform is a complicated task.* What works in one place, under one condition, may not work at all in other places or under different conditions. The problems of schools serving concentrations of disadvantaged students will not be solved by school autonomy and parental choice. If a country cares about the students in such schools, it must be prepared to experiment with large-scale, centralized interventions specifically directed at the educational challenges faced by such schools. (New Zealand's Bold School Reform 2000)

Global Unification and Standardization

Although the main trend in societies has been for education systems to grow increasingly unified and standardized, during the latter decades of the twentieth century and into the twenty-first century a decentralization movement that devolves more decisionmaking to local schools has countered the centralizing tendency. Nations other than New Zealand that have instituted decentralization plans have included Australia, Chile, England, and Nicaragua. However, even when central authorities relinquish some types of decisionmaking, they retain control over such vital matters as major policies, curriculum goals, and the assessment of schools' performance.

DIVERSIFICATION AND SPECIALIZATION

The history in Great Britain of special educational provisions for learners who suffer physical or psy-

chological disabilities illustrates the developmental principles of diversification and specialization. When Sally Tomlinson (1982, 61) traced the officially recognized categories of persons with special educational needs from 1886 to 1981, she found that in 1886 there were only two statutory classes, both focusing on mental retardation—idiot and imbecile. By 1913 six more categories had been added—moral imbecile, mental defective (feeble-minded), blind, deaf, epileptic, and physically defective. In 1945 there were twelve categories, with some incorporating more than one earlier designation (severely subnormal subsumed both idiot and imbecile), while further new varieties extended earlier categories (partially sighted was added to blind, and partially hearing was added to deaf). By 1981 the official types numbered fourteen, with several additional varieties suggested but not formally adopted. The 1981 list consisted of: child with learning difficulties (severe), child with learning difficulties (mild), blind, partially sighted, deaf, partially hearing, epileptic, maladjusted, disruptive, physically handicapped, speech defect, delicate, dyslexic, and autistic. Other suggested types included neuro-pathic child, inconsequential child, psychiatrically crippled child, and aphasic child.

The extent of diversification can vary from one society to another, an apparent indicator of different rates of education's developmental progress. For instance, in Indonesia prior to 1945, when the territory was ruled by the Dutch colonial government, special educational provisions focused on four kinds of handicap—blindness, deafness/muteness, mental retardation, and social maladjustment (juvenile delinquency). After indigenous Indonesians won their political independence at the close of 1949, services for disadvantaged learners expanded at a slow rate until the mid-1970s, when significant attention was focused on the handicapped. In the 1980s the government's definition—according to the Program Perbaikan Kinerja Sistem Pembelajaran (PPKSP)—of exceptional children still stressed the traditional categories of blind, deaf and mute, mentally retarded, and physically disabled. However, the definition had expanded to include the cerebral palsied, the emotionally disturbed, the multihandicapped, the chronically ill, and the gifted (Thomas 1988, 1).

In China by 1980 there was even less diversification of special educational services than in Indone-

sia. Official provisions were limited to four kinds of handicap—blindness, deafness, marked mental retardation, and antisocial deviance (Tomlinson 1982).

DEMOCRATIZATION

The degree of democratization of education—in the sense of extending formal education to ever-larger proportions of a nation's population—is reflected in such indicators as gross enrollment ratios and literacy rates.

Gross Enrollment Ratios

A gross enrollment ratio (GER) expresses the number of pupils at a given level of schooling (such as primary grade four) compared to the number of children in the nation's general population who are the typical age for that grade level (such as age nine). The GER, however, will be misleading if, at a given grade level, there not only are pupils of the typical age for the grade, but also pupils who are younger or older than the typical age because: (1) they began first grade when they were older or younger than the official starting age or (2) at some time they failed to be promoted to the next grade at the end of the year and thus were obliged to repeat the grade. Both of these factors lead to a grade's over-age enrollment, especially in the upper grades. Ideally, the GER for a nation's schools would be 100 percent, with all children in the general population enrolled in the grade typical for their age. But in reality the GER is a combination of children of the expected age for the grade and ones who are younger or older than the expected age. Consequently, if there are many children who are overage for the grade in which they are enrolled, the GER for that country's schools can exceed 100, which usually means that many pupils were failing to advance to the next higher grade each year.

In summary, then, the GER is a rough measure of the proportion of the school-age population enrolled in school, but not a perfect measure.

Consider, for example, the contrasting pairs of 1999 gross enrollment ratios for eight nations from different regions of the world (see Table 21.3).

The figures for such countries as Djibouti and Niger suggest that a relatively small proportion of children between ages six and fourteen were in school. The figures for Tunisia and Malawi imply that not only

Table 21.3

Variation in Gross Enrollment Ratios, 1999

Region	Country	Low GER	Country	High GER
North Africa	Djibouti	37	Tunisia	118
Sub-Saharan Africa	Niger	32	Malawi	158
Latin America	Jamaica	99	Brazil	166
Western Europe	Cyprus	83	Portugal	123

Source: Adapted from *Education for All: Is the World on Track?* (Paris: UNESCO, 2002): 45.

were most school-age children attending school but also many were repeating grades. For instance, 12 percent of Tunisian children repeated first grade and 13 percent repeated second grade. In Malawi, 18 percent repeated first grade and 16 percent repeated second grade (UNESCO 2002, 262, 268).

The high percentage of children in school is an indicator of a society’s desired progress toward universal schooling. However, a large number of grade repeaters reflects either (1) inefficient instructional programs that too often fail to teach children effectively or (2) standards of achievement set unreasonably high for the kinds of learners served by the schools.

Literacy Rates

Another indicator of progress toward universal education is a society’s literacy rate—the proportion of the populace that can read and write, at least at a simple level of competence. Consider, then, the literacy rates in seven nations and six regions in 1990 and in 2000, suggesting the pace of growth of literacy for people age fifteen and above. (see Tables 21.4 and 21.5)

It is thus apparent that (1) there have been marked differences between countries and regions in the degree to which formal education has been extended to all segments of the population, (2) progress was made during the 1990s toward democratizing formal education, and (3) the rate of progress has varied from one country to another.

In 2003, the United Nations launched a Literacy-Decade campaign (2003–15) with the motto “Literacy for Freedom.” The campaign is aimed at eliminating—or at least significantly reducing—the current figures of 860 million adult illiterates and 100 million children with no access to schooling.

Table 21.4

Adult Literacy Rates in Seven Countries

Nation	% Literate	
	1990	2000
Algeria	53	67
China	78	85
Cuba	95	97
Estonia	99	99
Iraq	35	39
Jordan	82	90
Niger	11	16

Source: Adapted from *Education for All: Is the World on Track?* (Paris: UNESCO, 2002): 206–212.

Table 21.5

Adult Literacy Rates in Six Regions

Region	% Literate	
	1990	2000
Arab States	67	76
Central/Eastern Europe	98	99
Latin America	93	95
North America/Western Europe	99.5	99.7
South and West Asia	62	67
Sub-Saharan Africa	49	60

Source: Adapted from *Education for All: Is the World on Track?* (Paris: UNESCO, 2002): 206–212.

SECULARIZATION

As noted earlier, religious groups originally introduced formal education in most, if not all, societies as a means of propagating their faith. Hence, the primary purpose of teaching reading, writing, history, customs, and the arts was to further a religious mission. However, as societies became increasingly complex, the religious subject matter of schooling was supplemented with subject matter useful in everyday nonreligious life (secular subjects) and founded on evidence other than the divinely revealed holy doctrine in such writings as the Hindu Vedas, Buddhist Tripitaka, Jewish Torah, Christian Bible, and Islamic Koran. The added secular studies, based on empirical observations rather than “authoritative truth,” included mathematics, natural science (as-

tronomy, biology, chemistry, geology, physics), social science, and certain crafts. As societies have modernized, the proportion of secular studies in schools has increased, and religion has become a much-diminished part of the curriculum. Furthermore, the question of whether publicly funded schools should teach religion at all has become a matter of heated debate in recent times.

When the United States of America was established as an independent country in the closing years of the eighteenth century, the issue of the proper relationship between religion and the secular government resulted in a decision to permit all citizens to follow their own choice of a religion or philosophy of life and not endorse any particular religion as the one favored by the government. This policy of separation of church and state has traditionally been applied to schools supported by public monies. Consequently, no religion's doctrine is to be advocated in a U.S. public educational institution. At the same time, privately sponsored schools could propagate whatever faith they choose. One apparent motive behind the founding fathers' separation of church and state was to avoid the conflicts that would arise if they adopted one of the American colonies' religious denominations (Catholic, Quaker, Baptist, Presbyterian, or others) as the government-endorsed religion, thereby alienating members of the other denominations as well as the growing number of agnostics and nonreligious citizens.

The majority of the world's governments, like the United States, have no official religion. However, a minority have continued to maintain a state religion—the Church of England in England, Buddhism in Thailand, Islam in Egypt and Pakistan, Evangelical Lutheranism in Denmark and Norway, Hinduism in Nepal, and Roman Catholicism in Bolivia and Peru. Furthermore, after World War II, the newly formed nation of Malaysia adopted Islam as its official religion. In these countries, as well as in a many that have no official religion, some hours are allocated each week to religious education in all schools.

During the twentieth century and into the twenty-first, people emigrated at a rapidly increasing pace from their home country to settle in some other country. As a result, societies that were at one time single-faith became multifaith, as growing numbers of newcomers arrived who subscribed to different religions or to no religion at all. Such groups' political

activism has encouraged the elimination of religious studies from public schools. Or, as a compromise practice, religious education has increasingly become comparative religion—inspecting various religions rather than teaching one particular religion's doctrine as “the truth.”

The questionable vocational value of classes in religion has also contributed to the diminishing attention schools give to religious studies. For example, in Indonesia's thousands of Islamic *madrasahs* that have been supported by public funds, the government in the 1970s required that students must spend at least 70 percent of their time studying secular subjects and no more than 30 percent on religious topics. This was the opposite ratio to the one traditionally found in *madrasahs* (Thomas 1988).

Whereas the main trend in schools throughout the world has been toward greater secularization of the curriculum, the trend has often met stiff opposition. Consequently, during the early years of the twenty-first century conflicts continued between advocates and critics of including religious doctrine among school subjects. In India, opponents of the nation's ruling Bharatiya Janata Party accused the government of attempting to “saffronize” the country's public education system by fostering Hindu religious beliefs in schools, a violation of the secular status of public schools prescribed in the nation's constitution. Saffron was the color of the flag flown by the Rashtriya Swayamsevak Sangh, a Hindu supremacist organization that administered 14,000 schools.

In the United States, the Oregon state senate voted to prohibit posting the biblical Ten Commandments in public schools whereas the North Carolina state senate voted to permit it. The Hawaii state board of education struck down a proposal that would have permitted the Judeo-Christian biblical version of the world's creation to be taught in science classes—in parallel with Darwin's theory of evolution—as a proper theory of human beginnings. The U.S. Supreme Court, by a vote of five to four, approved of government agencies issuing funding vouchers that families could use to pay for their children to attend private schools, including schools sponsored by religious groups.

In England and Wales, where church-sponsored “faith schools” have been supported by public tax funds, the ruling Labour government recommended a substantial increase in the number of schools on the

belief that they offered a better quality of education than did secular schools. Strong opposition to the plan was voiced by members of Parliament and teachers' unions, charging that faith schools fomented antagonism between religious groups, accepted only students who subscribed to the school's faith, and did not offer a superior level of education. An opinion poll in Scotland reported that respondents, by a four-to-one margin, supported a government proposal to abolish the traditional policy of segregating pupils at age five into schools sponsored by their parents' church affiliation. However, a coalition of Roman Catholic parents vigorously objected to their children's mixing in school with students from other religious backgrounds on the belief that such integration would be morally damaging to the 130,000 pupils attending Scotland's 416 Roman Catholic secondary and primary schools (Thomas 2002, 2003).

In the future, it seems likely that the secularization of public schools' curricula will continue as nations become increasingly multicultural. Furthermore, it appears likely that religious groups will continue to simultaneously hold two contradictory opinions about secularization. Whereas they would like to have their own religious convictions taught (and thus they would support teaching religion in the schools), they fear that other religious groups would insert different doctrine into the curriculum (and thus they would advocate keeping doctrinal views out of public schools).

TECHNOLOGICAL COMPLEXITY

The expression "educational technology" is used here to mean both instructional equipment and the ways equipment and supplies are used to promote learning. Before the twentieth century, the development of new instructional technologies had been quite slow. Prior to Johannes Gutenberg's (1400–1468) invention of movable type, books had to be laboriously copied by hand and were necessarily limited in number. But from the fifteenth century forward, improvements in the printing trade made books—including school textbooks—widely available, so books became the major form of technology on which instruction depended, as is still the case today.

The speed at which educational technology advanced in the world during the twentieth century—and into the twenty-first—can be illustrated with

examples of the use of radio, television, and personal computers in schooling.

Radio

The first commercial radio station in the United States began broadcasting in 1920. By the end of 1921, a total of eight stations were operating. The first educational radio licenses were granted in 1922 to the University of Salt Lake City, the University of Wisconsin, and the University of Minnesota. By 1923 over 10 percent of all broadcast radio stations were owned by educational institutions delivering educational programming. Despite the popularity of instructional radio, only one college-level credit course had been offered by radio by the year 1940. Between 1922 and 1946, educational broadcasting licenses were granted to 202 colleges, universities, and school boards in the United States, while educational broadcasting in Europe and other regions also grew at a steady pace (Nwaeronu, Goodluck, and Thompson 1987).

Between the 1950s and 1980s, radio broadcasting served throughout the world as an important distance-education medium for teaching such topics as: (1) mathematics to school children in Thailand, (2) rural development in India, (3) public health practices in Swaziland, (4) literacy in Mali and Mexico, (5) agricultural methods in Nigeria, (6) health education in Nicaragua, (7) nutrition in the Philippines, (8) farming practices in Canada and Guatemala, (9) family planning in Sri Lanka, Trinidad, and South Korea, (10) civics education in Botswana, and (11) primary-school subjects in the Dominican Republic and Paraguay (Nwaeronu, Goodluck, and Thompson 1987).

By the twenty-first century, the amount of distance education by radio had diminished, principally as the result of competition from television and the Internet. However, radio still played an important teaching role, particularly in developing nations that lagged behind the more advanced industrial countries in the educational use of television and computers.

Television

Credit for inventing the first television camera (iconoscope in 1923) and television receiver (kinescope in 1924) belongs to Vladimir Zworykin, a Russian who immigrated to the United States in 1919. Thereafter, as experimenters effected gradual improvements in

television technology, educators began to recognize the instructional potential of the medium. In 1934, the State University of Iowa—one of the first colleges to offer radio courses for credit—became the first educational institution to broadcast courses over television. However, until the mid-1940s, the public use of television was very limited. Only after World War II did a rapidly increasing number of public-service and educational organizations establish broadcasting stations in nations across the globe.

As the number of educational stations and the variety of educational programs grew, so did the quantity of television viewers. For example, over a twenty-seven-year period at the end of the twentieth century, the number of television receiving sets in the world increased from eighty-one per 1,000 inhabitants in 1970 to 240 per 1,000 inhabitants in 1997. However, the availability of receivers varied significantly from one nation to another. By 1999, the number of receivers for each 1,000 inhabitants was 290 in Argentina, 9 in Cambodia, 703 in Canada, 1.4 in Chad, 294 in China, 555 in Estonia, 580 in Germany, 4.7 in Haiti, 719 in Japan, 600 in the Netherlands, 1.7 in Rwanda, 66 in Syria, 652 in the United Kingdom, and 844 in the United States (Communications 2002, 850–55).

The nature of educational television in different regions of the world can be illustrated with examples from India, Tanzania, Mexico, and the United States.

India Some educational applications of television have been aimed at large audiences. For instance, among the most important educational offerings of the government-operated Television India (*Doordarshan*) have been programs designed for primary school children in the five-to-eleven-year age group. The programs, telecast via satellite in the children's instructional languages, have been viewed on community television sets. Each broadcast segment of forty-five minutes duration has consisted of two programs of twenty minutes each, separated by a five-minute changeover time. The first program caters to the lower age group—five-to-eight-year-old children (grades one, two, and three) and the second to the nine-to-eleven-year age group (grades four and five). Program topics are selected from the primary school syllabus, with preference given to topics difficult to teach in a classroom situation, and are suitable for the visual medium (Chaudhary 1992).

Tanzania Many educational applications of television have been small scale, often limited to a single community, as illustrated by the learning center at Rubya School in western Tanzania, serving as a hub of education and information for both the school and the surrounding area. For instance, the nearby Humra Secondary School and the Nursing and Midwifery Training College at Rubya Hospital have used Rubya's library of videotapes from abroad to complement their curricula. As a result, broadcasts of videos on the topics of genetics, bacteria, viruses, and other health-related matters have distributed information about health issues, such as AIDS, to a wide audience of community members and healthcare workers, in addition to reaching students in classrooms (Nurses and Midwives 2000).

Mexico By 2004, Mexico had accumulated thirty-six years of experience in educational television. One of the most successful endeavors was the Telesecundaria project, designed to provide secondary-level education for students at 14,000 rural schools. In the early years of the twenty-first century, Telesecundaria programs were reaching one-third of Mexico's five million secondary-school students. The project was especially important in rural areas, where the number of students finishing primary school made it infeasible to build separate high school facilities. With a television set, a VCR (video cassette recorder), and audio-visual material, high school students in groups of less than twenty-five followed the telecast courses under the guidance of a teacher.

In 1995 the original Telesecundaria pattern was extended to primary schools and vocational education as well. The nationwide system consisted of 33,500 reception centers equipped with decoders and television sets. Four of the system's nine channels of educational programming were operated by the Mexican government and five by the Latin American Institute of Educational Communication (Cevallos 2000).

United States As one of many public-service television program providers in the United States, Kentucky Educational Television (KET) began in 1968 as a statewide public broadcasting network. By 2003, KET was the largest Public Broadcasting System (PBS) member network in the country, with thirty-two transmitters (sixteen analog, sixteen digital) delivering the PBS national schedule and local arts, cultural,

documentary, and public-affairs productions to viewers throughout the state of Kentucky and in parts of seven surrounding states. By means of a satellite network and digital broadcast, KET also sent hundreds of hours of instructional programs and professional-development seminars to the state's schools each year. In addition, via satellite and the World Wide Web, KET Distance Learning offered fully accredited high school classes in foreign languages, the humanities, and physics (KET 2003).

Personal Computers and the Internet

Whereas large mainframe computers were operating in businesses and government departments by the close of the 1970s, not until the 1980s did individual people have access to computers. Thus, only in the final two decades of the twentieth century did personal computers rapidly become normal equipment for classrooms and school computer laboratories. By the early years of the twenty-first century, computers had spread rapidly to school systems around the world. However, students' access to a computer varied dramatically from one country to another, as examples from the following four nations demonstrate.

United States Between 1990 and 2003, the United States invested \$40 billion to bring computers, educational software, and Internet connections to the nation's schools. The proportion of schools connected to the Internet increased from 35 percent in 1994 to 99 percent in 2001. Between 1998 and 2001, the ratio of twelve students to one Internet-connected computer improved to five-to-one by 2001. Learners who had no computer at home could find one in school or in a public library, so that by 2002 nearly 90 percent of all school-aged children (aged five to seventeen) operated computers and 59 percent used the Internet, making American children the most Internet-connected in the world. Slightly more than 80 percent of children (aged ten to seventeen) in the lowest income category were using computers at school, a figure little different from the 89 percent of children from households in the highest income bracket (Dickard 2003).

Uzbekistan In 2002 about half of the 10,000 schools in the former Soviet Union province of Uzbekistan

were equipped with computers. However, only 1.2 percent of the machines were modern. Most of the others were Soviet-made instruments as much as twenty years old. Due to the age of the existing machines and a lack of spare parts, many were not in working order, so hardly 3 percent of all students in Uzbekistan had access to serviceable school computers. To help remedy this condition, the United States Agency for International Development sponsored the installation of ten personal computers in each of one hundred primary and secondary schools throughout the country, so that at least 10,000 students would have access to a computer and, in many schools, access to the Internet (IREX 2002).

Rwanda As has been the case in many of Africa's Sub-Saharan nations, providing widespread schooling opportunities for Rwanda's population has been a slow, arduous process. Consequently, Sub-Saharan Africa has been late in adopting advanced educational technology. In 2003, the effort to equip Rwanda's schools with computers was fostered by a program called Schoolnet, financially supported by the World Bank and United States Agency for International Development. To launch the effort, Schoolnet personnel installed a computer laboratory (sixteen computers and printers) in each of thirteen secondary schools—one school in each province and two in the city of Byumba. Eleven additional schools across the country were scheduled to receive laboratories by 2004, and a plan was laid to provide one computer in every primary school in the country that had access to electricity (United Nations Office for the Coordination of Student Affairs, 2003).

Sweden By 1999, there was a computer for every ten pupils in Swedish compulsory schools. Eighty-six percent of primary schools had access to Internet computers, while the figure for the upper secondary schools was 95 percent. From 1999 to 2001, the number of computers in the schools continued to increase sharply. The number of computers for teachers' use rose to 84 percent in municipal primary-secondary schools, and the number of teachers per computer became three rather than six as it had been in 1999. In primary-secondary schools, eight pupils had common access to a computer, as compared to ten pupils in 1999. In upper-secondary schools, computer density was reduced from five to four students per computer. Sev-

enty-eight percent of primary-secondary school computers were connected to the Internet, compared to 57 percent in 1999. In upper-secondary schools, 93 percent of students' computers had Internet access compared to 87 percent in 1999. By 2001, two-thirds of the pupils in primary-secondary schools, 81 percent of upper-secondary school students, and 92 percent of upper-secondary teachers had an available email address.

To summarize, over a period of hardly more than two decades, computers in schools became major instructional aids, facilitating students' writing activities, their pursuit of individualized lessons, and their access to infinite sources of information on the Internet. Computers were bound to effect major changes in education in the foreseeable future, providing the populations of developing nations the chance to take advantage of educational resources never before available.

R. Murray Thomas

STIMULANTS TO DEVELOPMENT

Colonialism, international comparisons, funding opportunities, and self-perceived needs were identified earlier in this chapter as four of the factors that can promote educational development. How the four may function in different societies is demonstrated in the following five cases.

COLONIALISM IN THE PACIFIC ISLANDS

From the sixteenth century until the mid-twentieth century, European adventurers sailed the seas, intent on exploring and colonizing the rest of the world. Their goals were threefold—to gain political control over foreign lands, to exploit the commercial potential of the captured territories, and to “civilize” the indigenous peoples. The term “civilize” meant imposing European culture, including the Christian religion, on the conquered populations. The adventurers acted as the official or unofficial agents of European governments, mainly of Belgium, Britain, France, Germany, Italy, the Netherlands, Portugal, and Spain. At the end of the nineteenth century the United States joined the lists by wresting Cuba

and the Philippines from Spain during the 1898 Spanish American War. Japan soon followed by annexing Korea in 1905.

In the European and United States colonizing efforts, the adventurers were accompanied by missionaries who felt duty bound to bring the native peoples of the world into the Christian fold. Church attendance and schooling became the instruments for achieving that goal. The style of schooling was European—a heavy emphasis on Christian doctrine that called for the ability to read the Bible, supplemented by the practical skills of writing, calculating, and simple vocational pursuits (crafts, homemaking, gardening). The curriculum also included geography, natural science, and history (world, European, American). Consequently, it was mainly Christian missionaries who introduced European-style schooling in Africa, Asia, North America, South America, and the Pacific Islands—the schooling style that continues today as the dominant mode of formal education across the world.

The pattern of missionary efforts varied from one region to another as influenced by the nature of the different indigenous peoples' social structures and cultures. How such factors affected the missionaries' educational activities can be illustrated with colonization in the Pacific Islands during the nineteenth and early twentieth centuries.

When European explorers sailed to the Pacific, they were not universally welcomed by the islanders. Ferdinand Magellan, under the flag of Spain, attempted to be the first sea captain to circumnavigate the world, but was slain by natives in the Philippines in 1521. British Captain James Cook, the most renowned of the Europeans who went to the Pacific, was killed by Hawaiians in 1779. However, in most cases the strangers from Europe and North America were accepted by Oceania's Polynesian, Melanesian, and Micronesian peoples. The main intrusions of settlers from Europe and the United States occurred during the nineteenth century, with the most prominent influence on native cultures exerted by Christian proselytizers from Britain, France, Germany, Spain, and the United States.

Prior to the missionaries' arrival, the islanders had no written form of their languages. Thus, it became one of the newcomers' principal tasks to learn the Pacific languages and cast them into written form so the indigenous peoples could read the bible and religious tracts on their own. Churches were built and schools organized in the same style as in the recent arrivals'

homelands. Within two decades or so of the missionaries' appearance, virtually all islanders were confessed Christians and, in the main, Pacific Islanders continued to be Christians into the twenty-first century.

By the early 1900s, virtually all of the Pacific Islands were under the political control of foreign nations, whose colonial governments began to establish secular public schools that operated in parallel to the missionary schools. The new schools were copies of the publicly supported schools in the colonialists' homelands. Following World War I, the League of Nations stripped Germany of that nation's extensive Pacific territories and assigned those islands as mandates to Japan, Australia, and New Zealand. Consequently, the schools in the territories formerly controlled by Germany would assume the character of Japanese, Australian, or New Zealand schools. After World War II, the United Nations assigned the former Japanese-controlled islands of Micronesia in the North Pacific to the United States as a trust territory. Thereafter, the schools in Micronesia were patterned after those in the United States, with the English language replacing Japanese or an island dialect as the main language of instruction.

In summary, each time a foreign government has gained political control of a territory, the schools in that territory have usually become patterned after the schools in the foreign invader's homeland, with missionaries often in the vanguard of educational change.

JOMTIEN, DAKAR, AND INTERNATIONAL TESTING PROGRAMS

The effect on educational development of publicly comparing one nation with another can be demonstrated with two sets of events that occurred during the final decades of the twentieth century and continued into the twenty-first century. The first set concerned international comparisons in educational opportunity. The second set concerned the quality of students' learning as revealed by paper-and-pencil tests and inventories in such curriculum areas as reading, mathematics, science, social science, foreign languages, and citizenship.

Educational Opportunity

In March 1990, delegates from 155 countries, as well as representatives from 150 organizations agreed at

the World Conference on Education for All in Jomtien, Thailand, to universalize primary education throughout the world and massively reduce illiteracy by 2000. The delegates hoped to solve the following problems over the coming decade:

- More than 100 million children, including at least 60 million girls, had no access to primary schooling.
- More than 960 million adults, of whom two-thirds are women, were illiterate.
- More than one-third of the world's adults had no access to the printed knowledge, new skills, and technologies that could improve the quality of their lives and help them shape, and adapt to, social and cultural change.
- More than 100 million children and countless adults failed to complete basic education programs, whereas millions more satisfied the attendance requirements but did not acquire essential knowledge and skills. (UNESCO 1990)

Data showing where different nations stood in relation to primary education opportunities and illiteracy were widely broadcast, with the publicity intended to stimulate each country's political leaders to adopt steps toward improving their country's position in the international comparisons. An assessment of how well the goals had been reached at the close of the decade was offered at the World Education Forum in Dakar, Senegal, during April 2000, attended by more than 1,100 participants from 164 countries, 150 nongovernmental organizations, and numerous agencies and development banks. The assessment revealed that progress had been made, but there was yet much to be done to meet the Jomtien target.

For example, the number of children in school worldwide had risen from an estimated 699 million in 1990 to 781 million in 1998, an increase of around ten million each year. The goal of universal primary schooling had already been reached in Europe and North America, while Eastern Asia, the Caribbean, and the Pacific Islands were close to achieving that goal. The number of school-age children not in primary schools decreased from an estimated 127 million in 1990 to 113 million in 1998. In Latin America and the Caribbean, the total not enrolled in school was more than halved, from 11.4 million in 1990 to

4.8 million in 1998. However, for a variety of reasons, including high population growth, many countries in Sub-Saharan Africa had failed to reduce the number of out-of-school children. Regions achieving the least improvement were rural and poverty-ridden urban areas (Peppler-Barry 2000, 11–13).

The delegates at Dakar then issued the following set of six worldwide goals to reach by 2015:

- Expand early childhood care and education. Provide free and compulsory education of good quality.
- Promote the acquisition of life skills by adolescents and youth.
- Increase adult literacy rates by 50 percent.
- Eliminate gender disparities in education and achieve gender equality.
- Enhance educational quality.

To summarize, from 1990 onwards, widely advertised comparisons of nations' progress toward universal literacy and schooling have stimulated governments to exert serious efforts toward improving their citizens' educational opportunities.

Test Results

The latter decades of the twentieth century witnessed a growing number of international assessments of educational achievement that compared nations in terms of scores on tests administered to a representative sample of students in each participating country. The most extensive assessments were ones conducted by the International Association for the Evaluation of Educational Achievement (IEA), an organization constituted in 1967 to carry out multinational research in education. In selecting what to measure, IEA officials chose to undertake studies that had a good chance of contributing to the improvement of education in a variety of countries, whose methodology was already well developed, and in which many countries wished to participate.

The typical nature of the results of multinational testing can be illustrated with a 1990–91 IEA study of reading literacy among nine-year-olds and fourteen-year-olds in twenty-six countries. The tests, cast in the language medium of the schools of each participating nation, focused on skills of narrative, expository, and documentary reading. The six highest-scoring nations for

nine-year-olds were, in descending order, Finland (mean score of 569), the United States (547), Sweden (539), France (531), Italy (529), and New Zealand (528). The six with the lowest scores were Portugal (478), Denmark (475), Trinidad/Tobago (451), Indonesia (394), and Venezuela (393) (Elley 1992, 14).

Among the multinational assessments that have attracted the greatest public attention are those in mathematics and science, two school subjects viewed by politicians as particularly important for their nation's economic progress and international standing. In a 1999 study of eighth-graders' performance on mathematics and science tests in thirty-eight nations, the six highest-scoring countries in mathematics were Singapore (604), South Korea (587), Taiwan (585), Hong Kong (582), Japan (579), and Belgium-Flemish (558). The six lowest were Iran (442), Indonesia (403), Chile (392), Philippines (345), Morocco (337), and South Africa (275). The six highest in science were Taiwan (569), Singapore (568), Hungary (552), Japan (550), South Korea (549), and the Netherlands (545). The six lowest in science were Turkey (433), Tunisia (430), Chile (420), Philippines (345), Morocco (323), and South Africa (243). Among the thirty-eight nations, students in the United States ranked nineteenth in mathematics and eighteenth in science (TIMSS Results 2000).

The widespread publication of international studies' test results generated pride among the citizens and political leaders of nation's that scored high, whereas the results caused distress in nations that scored lower than vocal citizens and leaders had hoped. For example, in the United States the former Secretary of Education, Richard Riley, declared that the 1999 math and science scores were entirely unacceptable and confirmed the need to raise standards of achievement, testing, and teaching, especially in middle and high schools. One important motivating factor behind U.S. President George W. Bush's expensive "No Child Left Behind" education initiative in 2002 was the "poor showing" of his nation's students on the math and science tests. In a similar mood, Germany's Chancellor Gerhard Schroder, speaking to the Bundestag (parliament) in 2002, declared that the nation's "soft" education policy of recent years was an "embarrassment" and should be replaced (Deutsche Welle World 2002). One apparent cause for Schroder's alarm was German fifteen-year-olds' weak performance on recent international tests in which Germany ranked

twenty-fifth out of thirty-two countries in reading, mathematics, and scientific literacy.

In summary, the recent multinational achievement test movement stimulated political and business agents to support changes in their nation's education system that they hoped would produce more acceptable test scores in the future.

NIGERIA'S ISLAMIC AND CHRISTIAN MISSIONS

Africa's most populous nation, Nigeria, illustrates how a country's present-day education system can result from past colonizing activities by two competing religious movements—Islam and Christianity. In terms of religious affiliation, Nigeria's population of 126 million at the outset of twenty-first century was 43 percent Islamic, 36 percent Christian, and 21 percent African indigenous practices.

The Islamic movement in Nigeria came first. After the Prophet Mohammad's death in 632 C.E., the Islamic religion that he had founded would spread from its Arabian birthplace to regions that today include all of North Africa, Sub-Saharan West Africa, the Middle East, Central Asia, India, Western China, Malaysia, and Indonesia. During certain historical periods, Islam also dominated portions of Southern and Eastern Europe. The religion was carried into new territories by Arab traders and scholars, including those who won the allegiance of indigenous tribes in northern Nigeria from the thirteenth century onward. To propagate the faith, individual Islamic scholars established schools in which children and youths would learn to recite the religion's chief holy book, the Koran (Qur'an), and would study the Sunnah—a collection of the sayings and works of the Prophet Mohammad. By 1919 there were an estimated 25,000 Koran schools in northern Nigeria, many of which would continue into the twenty-first century.

The Christian movement came later. From the fifteenth century into the mid-1800s, European adventurers—including the English—bought slaves in West Africa and shipped them to the Americas. After Britain outlawed slavery in 1807, the British navy not only stopped transporting slaves from Nigeria but also prevented other countries from doing so. In 1886, the British annexed Nigeria as a colony, and Christian missionaries introduced European-type schools designed to bring Nigerians into the Christian fold. Over the following decades, the colony's

greatest economic and educational progress was achieved in the southern sector of the country in which the British—and the Christian schools—wielded the greatest influence. The missionaries' European-type schools, conducted in the English language, failed to make significant inroads in the Islamic northern section of the country. Consequently, when Nigeria won political independence in 1966, the new nation was divided—north versus south—in religion, schooling, and economic strength.

Significant differences between the two colonizing efforts—Islamic and British—led to the two major forms of schooling found in Nigeria today: the Koran school and the European-style school. Moslems did not colonize Nigeria in the sense of a foreign government gaining political control over a region. Instead, their colonizing consisted of convincing native peoples to adopt a new belief system, that of Islam. In contrast, the British won administrative control of the country by force of arms and diplomacy, thereby setting the stage for missionaries to establish schools that would disseminate the colonial masters' religious convictions, schooling subjects, and English language among the indigenous peoples.

In the independent Nigerian government that was established in 1966, the British version of education prevailed. The government-endorsed school system was modeled on a secular European 6–3–3–4 pattern (six-year primary school, three-year junior secondary, three-year senior secondary, and four-year university) and followed the same curriculum found in typical European schools. The language of instruction, especially in the upper grades, was English, which was the medium of communication in a nation whose peoples spoke more than four hundred languages.

During the early years of the twenty-first century, formal education in Nigeria was confronted with an array of serious challenges, those of (1) reducing a high rate of illiteracy, (2) easing the growing antagonism between the Islamic north and the Christian and secular south, (3) increasing the proportion of children and youths attending schools that taught knowledge and skills useful for the nation's socio-economic modernization, and (4) providing equal educational opportunities for both boys and girls.

Among Nigerians age fifteen and above, 72 percent of men and 56 percent of women were literate in 2000. The rate for men had thus improved by 13 percent for men and by 18 percent for women since

1990. However, there was a marked discrepancy in levels of literacy and European-style schooling between the north and south. A significantly lower proportion of residents in the Islamic north could read and write than in the south, especially among women. During the early years of the twenty-first century, the likelihood that the discrepancy would grow even wider resulted from an increasing number of the northern states adopting Islamic *sharia* (customary) law in contrast to the civil law stipulated in the nation's constitution. Under sharia law, men enjoyed far greater privileges than women, so girls were more often kept home rather than sent to school. They were particularly excluded from secondary and tertiary education. Therefore, the differences in religion and attitudes toward schooling (especially toward the study of secular subjects) that had originated with the missionary efforts of earlier centuries continued to threaten the nation's unity and contribute to conflicts over what sort of education and how much was appropriate for the citizenry.

In conclusion, the case of Nigeria is not merely a tale of educational development in a single country. Rather, the case illustrates conditions affecting educational progress in numbers of developing nations, particularly those of Sub-Saharan Africa.

EDUCATIONAL EFFECTS OF AID AGENCIES

Developing nations frequently receive educational development help from more affluent governments, international agencies, and nongovernmental organizations (NGOs). There are hundreds of such sources of educational aid. The help is usually in the form of monetary loans or gifts, equipment, supplies, advisors, or opportunities for a country's educators to study abroad. The goals and conduct of a typical aid organization can be illustrated with the operation of one of the most far-reaching and influential of the international bodies, the World Bank.

The World Bank was created in 1944 as the International Bank for Reconstruction and Development to help Western Europe rebuild after World War II. By the 1960s the bank had begun providing educational assistance to developing nations. By the end of the twentieth century, bank funds had supported 600 projects in 115 countries at a total cost of \$26 billion. At the

outset of the twenty-first century, the bank's educational portfolio included \$14 billion spread across 187 projects in eighty-seven countries, with new lending between \$1 and \$3 billion a year.

In 1999 the bank published its *Education Sector Strategy*, describing the agency's long-term goal of ensuring that everyone in the world completed a basic education consisting of foundation skills (literacy, numeracy, reasoning, and social skills such as teamwork) and had lifelong opportunities to learn advanced skills in a range of post-basic education settings. The focus of support for the years ahead would be on helping nations which lagged behind the rest of the world in twelve main areas: literacy, basic (primary) education, early childhood education, health practices, schooling opportunities for girls and the poor, school facilities, curricula relevant for improving a country's socioeconomic condition and the quality of life, efficient educational administration, effective teaching, the reduction of school dropouts and grade repeaters, methods of educational assessment, and collecting and reporting schooling data (Education Sector Strategy 1999).

One example of projects accorded high priority in World Bank plans in the early twenty-first century was the effort to improve the school attendance and achievement of girls in fifteen of the bank's African and Middle East client countries in which there were exceptionally large gaps between girls' and boys' primary enrollment rates. Emphasis was also placed on improving primary education in sixteen Sub-Saharan African countries in which educational attainment was well below the level required to achieve sustainable economic growth and poverty reduction.

Over the decades—and particularly in recent years—World Bank activities have attracted critics, who object to two features of the bank's operations. First, World Bank plans make clear that the sorts of projects the bank will finance are those that bank officials believe will contribute significantly to improving the economic growth of less modernized nations, particularly of nations in Sub-Saharan Africa, Southeast Asia, and parts of Latin America. Critics have charged that the projects which the bank insists the recipient nations carry out are often ones that will not contribute sufficiently to the welfare of the general populace, and especially to the welfare of the poor. In the critics' opinion, large sums are expended on the construction of infrastructure facili-

ties that do not fulfill the needs of most people. The bank has also been faulted for imposing harsh conditions on borrowing nations. The loan conditionalities have included such controversial structural adjustment policies as monetary austerity, high user fees for primary education and health care, inequitable privatization of state-owned enterprises, and premature liberalization of financial markets.

Second, the funds that the bank has provided have usually taken the form of loans that must be repaid with interest. Therefore, according to dissatisfied observers, poor countries incur large debts whose repayment draws money away from such activities as providing education and health protection for the populace.

All of the blame for ostensible waste and damage has not been heaped on such aid agencies as the World Bank. Officials in the recipient nations have also been faulted for skimming off part of the aid money for their own use and for not resisting the temptation to accept loans that will place their nations in economic jeopardy.

Strategies adopted by the bank's critics have included conducting public demonstrations, publicizing the critics' complaints through mass communication media, and urging the boycott of World Bank bonds. The bank has traditionally raised nearly 80 percent of its funds by issuing bonds in private capital markets, and a growing number of organizations that invest in bonds have boycotted their purchase of World Bank bonds (Center for Economic Justice 2003). Bank officials have responded to such charges by citing examples of progress made by developing nations in projects conducted with bank funds, including projects in the educational sector.

To summarize, foreign aid agencies play an important role in the educational development of needy nations by furnishing money, advice, and personnel to support projects that the agencies deem important for the recipient nations' progress. Observers of international-aid agencies sometimes ask whether the selected projects and the way they are carried out actually do produce their supposed benefits without undesirable side effects.

EDUCATIONAL REFORM IN JAPAN

Three major reforms of the Japanese education system have been attempted over the past two centuries.

The first and third changes were the result of Japanese political and educational leaders seeking to promote their society's socioeconomic development by importing educational practices from abroad. The second reform was forced on Japan by foreign invaders.

The first reform appeared after the mid-1800s, when the newly empowered Meiji regime sought to modernize the nation's education system with borrowings from Germany, France, Britain, and the United States. The motivation of the Meiji leaders was to move their society from a semifeudal condition to that of an industrialized state, capable of competing effectively with the industrialized nations of Europe and North America.

The second reform occurred after World War II as the United States' occupation forces obliged Japanese educational authorities to alter their existing system so it would resemble the dominant North American model. The aim of the U.S. occupation government was to eliminate Japan's pre-World War II militaristic educational practices by substituting American educational goals and teaching methods.

The third major revision, begun in the 1980s and most dramatically implemented in the years 2002–04, reduced the complexity of the curriculum, replaced the six-day school week with a five-day week, stressed individualistic critical thinking, embraced internationalism, and decentralized decisionmaking in the public university system. A key stimulus behind the reform was the desire of political leaders, headed by Prime Minister Nakasone Yasuhiro during his period in office (1982–87), to stimulate greater creativity among Japanese students and thereby inject more indigenous innovations into the country's scientific and socioeconomic life.

DIVERSITY WITHIN INTERNATIONAL EDUCATION

Throughout this chapter, the international perspective from which education has been viewed has emphasized ways in which nations' education systems are similar, particularly in the components of schooling, the trends in educational development, and factors that promote development. However, the manner in which these common characteristics work out in individual nations is influenced by a wide range of factors that make education in each society unique—different from the ex-

act form of education in other societies. Those include such variables as a society's geographic size and character, political structure and goals, economic strength, health practices, ethnic and religious composition, cultural traditions, population size and growth rate, transportation and communication facilities, and more. Throughout this chapter, such variables have not been highlighted but, rather, have been reflected only in an indirect and often casual fashion in the illustrations of

different nations' educational practices. As the illustrative cases have implied, it is useful not only to adopt an international perspective that focuses on ways education systems are similar but also it is important to recognize the ways influential variables in society account for why one educational system differs from others in the way it fits into the international perspective.

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IV

PHYSICAL, MOTOR, AND COGNITIVE DOMAINS

PSYCHOMOTOR DOMAINS

How do individuals learn movement skills and acquire skill? How do young children develop movement patterns? What changes occur, motorically, across a person's lifespan? What are skillful performances? And how do the central nervous system and the environment control the execution of our movements? These questions are the concern of the entries included in this chapter. The chapter contains entries that focus on the disciplines, fields, and areas of study that deal with human movement and skill. The term *psychomotor domains* is used here to highlight the territories or fields of thought and action that are concerned with human movement, and the acquisition and development of motor skills, and skillful performances. The word *psychomotor* became popular in the late 1950s when Benjamin Bloom and David Krathwol published a handbook entitled *Taxonomy of Educational Objectives* (1956). Bloom and his associates identified three categories or educational domains that served to classify objectives and the types of learning that accrue in educational settings: cognitive—knowledge and intellectual thinking skills; affective—attitudes, values, appreciations, and emotions; and psychomotor—movement skills and abilities. The psychomotor domain categorized human movement from a psychological perspective. Not to be confused with Bloom's work, the term psychomotor domains in this chapter is used to describe disciplines, fields, and areas of study and research concerned with human movement and skill.

As a word element, *psycho* pertains to the human mind and soul; mental phenomena as opposed to physical. The word *motor* in a general sense is defined as pertaining to one who, or that which imparts motion or causes action. In a more specific and physio-psychological sense, the word *motor* refers to the effect or the phase of any neurological process—such as the innervation of muscles by nerve

impulses—that causes movement. Thus, psychomotor may be viewed as a term to describe the branch of the science of human movement that emphasizes the study of relationships or interactions between the environment and the mind-body—as exhibited in the nervous system—and the behavioral results seen as movement patterns, motor skill, and skillful performances.

THE PSYCHOMOTOR DOMAINS OF INTEREST

In this chapter, the disciplines or fields of motor development, motor learning, movement science, physical education, and adapted physical education are the psychomotor domains of interest. Also included as an entry is an area of study referred to as performative knowledge and the topic of skillful performances. This entry is relevant to the grouping of psychomotor domains in that it draws from the disciplines of philosophy and psychology to provide a description and an understanding of skillful performances from a psycho-philosophical perspective. It should be noted that there are other disciplines and fields that focus on the study of human movement. For example, kinesiology, biomechanics, motor control, physiology, and exercise physiology all study human movement from their own unique perspective. Although, they are disciplines or fields in their own right, some are briefly discussed in the movement science entry (e.g., biomechanics); others that have more of a physio-biological base rather than a psychological one are not included in the chapter (e.g., physiology and exercise physiology).

The psychomotor domains presented are portrayed by the entry writers in an introductory manner. Each domain has a rich history, and a body of knowledge and research that is used by scientists and practitioners in a variety of medical, health,

athletic, and educational professions. For example, scientists and practitioners in physical therapy, physical education, and adapted physical education all make use of the knowledge generated by each of the domains. While it is desirable to know each domain in depth, the purpose of this chapter is to provide readers with a general overview of each domain—focusing on its historical underpinnings, its current theoretical perspectives and issues, and the frameworks that guide the work of the scientists and practitioners. Each domain has its own unique research emphasis that has contributed to a greater understanding of how learning occurs, how individuals develop and age, how teachers facilitate the acquisition of skill, and the neural and behavioral processes involved in motor acts and skillful performances. Although each domain has a particular vantage point, there is some overlap (e.g., motor learning and motor development).

Today, more than in any other time in the history of these domains, a multidisciplinary approach is recommended for a more comprehensive understanding of human movement and skill. Movement science, defined as either a body of knowledge or as an academic discipline (including biomechanics, kinesiology, motor learning, and control) best represents a more multi- and inter-disciplinary approach to the understanding of human movement and skill. *Human Movement Science*, a journal devoted to pure and applied research, provides a forum that brings together the research on human movement from the disciplines. Currently, in the United States, Canada, Australia, and England there are a vast number of degree programs on the undergraduate and graduate level in colleges and universities offering courses in movement science and/or movement sciences. Students emerge from such programs prepared to either enter professions upon graduation or enter advanced education or medical programs that lead to a host of careers and professions. For example, students may be prepared to enter such professions as teaching, coaching, physical therapy, occupational therapy, speech therapy, podiatry, or sports medicine. Some individuals are prepared for positions as directors and administrators of youth activity programs at community centers. And others may be prepared to serve as clinicians at rehabilitative centers or researchers at university laboratories serving populations of healthy and impaired children and adults.

For example, under the directorship of Harriet Williams, a motor development specialist and researcher, the University of South Carolina operates a Perceptual-Motor Development Laboratory (PMD Lab). The PMD Lab conducts programs of motor development enrichment, rehabilitation, and research, and it provides evaluation services to a wide population of individuals. The PMD Lab employs a staff of professionals that includes a physical therapist, a developmental pediatrician, a speech therapist, a specialist in childhood obesity, and specialists in motor activity and research.

Also, it is important to know that the study of human movement and skill encompasses a lifespan perspective focusing on the periods of infancy, childhood, adolescence, and adulthood in healthy and disabled individuals. In particular, professionals affiliated with adapted physical education in schools and clinical settings concentrate on understanding movement disorders and abnormalities. Their intent is to provide individuals with educational experiences or rehabilitative services.

The movements and skilled performances of concern include a broad range and a wide spectrum. For example, the movement patterns that are studied by scientists and practitioners of the domains can range from simple ones such as crawling and walking to more complex ones such as driving a standard-shift car and operating a jet-engine airplane. A pianist's rapid finger movements in a concerto, a basketball player making a three-point shot, a young child's first steps and words, a chess player's strategic actions and decisions, a quarterback running an offense play, a stroke patient relearning to walk up stairs, a wheelchair-bound adolescent passing the ball in a basketball game, and a ballet dancer's leaps across the stage are all part of the vast terrain of movements, motor tasks, and skilled-performance phenomena that is studied.

TAXONOMIES OF HUMAN MOVEMENT AND MOTOR TASKS

Over the past three decades, a number of taxonomies and classifications systems that categorize human movement, tasks, and skills were developed by researchers and practitioners to carry out their work. Although Bloom and his associates in 1956 identified the psychomotor domain for purposes of classi-

fyng educational objectives, Anita Harrow in 1972 developed the taxonomy of the domain and published it in a book entitled *A Taxonomy of the Psychomotor Domain: A Guide for Developing Behavioral Objectives*. The taxonomy includes six categories of human movement: reflex movements (e.g., the stretch reflex); fundamental movements (e.g., crawling); perceptual movements (e.g., catching a ball); physical abilities (e.g., enduring a basketball game); skilled movements (e.g., playing a guitar); and nondiscursive communication (e.g., gesturing or using the body to express feelings or ideas). The taxonomy achieved some popularity with practitioners and researchers.

However, a taxonomy that gained recognition in the 1970s, and was used then and now by a substantial number of researchers and physical education teachers, was one developed by A. M. Gentile and her associates at Teachers College, Columbia University. The taxonomy was introduced, in its initial stage, in 1972 in an article in *Quest*, a professional journal for practitioners and scholars in physical education. It was later described, in greater detail, in 1975 and in 1981 to wider audiences in two published works, *Mouvement* (Gentile et al. 1975) and *Developing Sport Skills* (Spaeth-Arnold 1981). Much of the research in motor learning as well as the curricular experiences designed by physical education teachers focused on one or more of the categories of movement included in the taxonomy. The taxonomy, as presented in *Developing Sport Skills* by Ree K. Spaeth-Arnold, identified two major dimensions and subdimensions for purposes of describing and analyzing goal-directed movements and skill. The dimensions and subdimensions included: (1) the nature of the performance environment, described as either (a) closed—to denote environments that are stationary, that is nothing is moving in the physical environment, or (b) open—to denote objects and people moving in the environment; and (2) the nature of the movement, described as either (a) body stability—to represent a person maintaining stability or balance with or without manipulation of an object as in standing on a balance beam, and standing on balance beam while juggling, or (b) body transport—to represent a person moving or transporting their body through space with or without manipulation of an object as in walking, and walking across a street while holding packages. In 1981, the ideas and concepts surrounding the taxonomy (i.e., open and closed

performance environments, skills and tasks) along with an explanation of the factors influencing motor skill acquisition (i.e., the types of feedback given to performers) were put forth by Anne Rothstein, Linda A. Catelli, Pat Dodds, and Joan Manahan in a book published by the American Alliance of Health, Physical Education, Recreation and Dance entitled *Motor Learning: Basic Stuff Series*. In 1987, the taxonomy was adapted for the field of physical therapy by A. M. Gentile in the first edition of *Movement Science: Foundations for Physical Therapy in Rehabilitation*, and then further developed in a second edition of the book in 2000. The taxonomy has served as a conceptual mechanism for scientists to conduct their research, and it has served as a curriculum and assessment tool for practitioners and therapists in the psychomotor domains.

EMERGING DOMAINS IN PERSPECTIVE

It should be emphasized that this is a new day in the study of human movement and a new era for the psychomotor domains. There are large numbers of individuals in education, sports, athletics, health, medicine, music, and art who use the knowledge and research from the psychomotor domains. As aptly presented by Charles Shea and David Wright in their book *An Introduction to Human Movement* (1997), a renewed interest on the part of the general public of the importance of physical activity for health purposes has opened a wide array of career and professional opportunities for students beyond teaching physical education in schools. Also, the events occurring in academe and society in the 1990s helped to frame the domains in new and different ways.

Traditionally, the professional programs of physical education in colleges and universities prepared individuals to teach in schools and later to work in fitness, health, and sport centers. In the 1960s and 1970s many departments of physical education in colleges and universities in the United States housed courses or programs in what was referred to at the time as subdisciplines of physical education—motor learning, motor development, motor control, exercise physiology, kinesiology, and biomechanics. In 1984, in a feature article in a professional journal for librarians entitled *Collection Building*, I was asked to provide a comprehensive definition of

physical education for purposes of developing and arranging collections of books and materials for school and public libraries. In the article, entitled “Physical Education in the 1980s: A Guide for Developing Children’s and Young Adult Collections,” physical education was defined, as it existed then in higher education, as an academic discipline and as a profession. As a profession, it had as its focus the training of teachers to work primarily in schools. Pedagogical skills, and knowledge drawn from the sciences (e.g., physiology) as well as knowledge and skills related to sport, dance, games, and exercise was the body of knowledge acquired by students choosing to major in the professional track. Those who went on to graduate work in the professional track studied pedagogy. Some became curriculum and teaching specialists and found positions in teacher-education programs in colleges and universities. Others became consultants, administrators, scholars, or researchers in the area of curriculum and teaching of physical education. As an academic discipline, physical education’s body of knowledge focused on the themes of movement, fitness, and the behaviors associated with sport participation. Historically, it drew upon knowledge and research from other established disciplines: anatomy, kinesiology, physiology, sociology, physics, philosophy, and history. In the 1960s and through to the early 1980s it developed subfields or subdisciplines which provided the knowledge and research necessary to call physical education an academic and scientific discipline. During the period, (circa 1960 to 1985) the subdisciplines, which contributed to the scientific foundation of the discipline of physical education, were defined as:

Exercise Physiology—the study of the human body when placed under the stress of exercise or vigorous activity.

Motor Learning—the study of how an organism acquires skill and performs a movement.

Motor Control—the study of the underlying neural and behavioral mechanisms and processes that are operative during movement.

Kinesiology—the study of motion and the principles of anatomy.

Biomechanics—the science and principles of physics or mechanics in relation to the movement of living things.

Sport Psychology—the examination and analysis of psychological aspects of sport participation and performance.

Sport Sociology—the study of the social dimensions of behavior during sport situations.

History of Sport—the recording, comparisons, and interpretations of past events related to sport and physical education.

Philosophy of Sport—the examination, analysis, and creation of theories, concepts, and issues related to sport, movement, and physical education.

Sport Pedagogy—the study and analysis of teaching movement and sport skills.

At that time, it was recognized that many of the subdisciplines had emerged from an established discipline referred to as the parent discipline. For example, psychology was the parent discipline of motor learning and motor development, and physiology was the parent discipline of exercise physiology. The scholars and researchers in these subdisciplines were interested in producing new knowledge, and their investigations were not necessarily directed at producing information that was immediately applicable to a teaching-learning situation. As subdisciplines of the discipline of physical education they pursued knowledge for its own sake. Students majoring in physical education took courses associated with one or more of the subdisciplines (e.g., motor learning, exercise physiology, kinesiology). Some students went on to concentrate on a subdiscipline and received training as researchers or scholars while others continued in an allied field or discipline. With the emergence and growing strength of the subdisciplines, often overshadowing the profession of teaching physical education, a number of faculties of physical education in universities changed the names of their departments. Beginning in the early 1970s and through the 1990s many faculties in colleges and universities retitled their departments using such names as the Department of Physical Education

and Exercise Science, Department of Kinesiology, Department of Sport Studies, Department of Human Kinetics, and Department of Human Movement Studies. The name changes were to more accurately reflect (1) the type of scholarly work and research that were conducted by the faculties, (2) the type of courses and programs of study that were offered by the department, (3) the varied professions students were preparing to enter, and (4) the broader population of students the department served. For example, in the late 1970s the Department of Physical Education at Teachers College, Columbia University changed its name to the Department of Movement Sciences and Education. The department offered courses on the graduate level in motor learning, motor control, and biomechanics. It was not uncommon at that time to have physical therapists, special educators, and physical educators all taking these courses. The focus was the study of movement processes involved in learning and performing perceptual-motor skills, and motoric rehabilitation. In 2004, at Teachers College, Columbia University, the programs in physical education and the program in motor learning and control all reside in the Department of Biobehavioral Sciences, representing yet another shift or change. Today, motor learning courses have wide appeal and applicability. For example, the Fashion Institute of Technology in New York offers a course in motor learning for individuals interested in designing developmentally appropriate educational toys for commercial companies. Physical and occupational therapists have courses in motor learning and control as part of their required course of study and professional development. And it is not uncommon for professionals in the field of ergonomics—the study of the problems of people adjusting to their environment—to make use of the knowledge and research from the domains of motor learning and motor development.

Beginning in the 1990s movement science or the term movement sciences began to dominate as a title for departments in colleges and universities as well as a title for master's and doctoral degree programs. Some of the subdisciplines of physical education that existed in the 1960s moved to departments housing the parent discipline in a university (e.g., sport psychology to psychology). Others either disappeared (e.g., philosophy of sport) or they were retained as course offerings. Today, one finds a number of university departments and

degree programs with Movement Science(s) or Kinesiology as their title.

This truly is a new day in the study of human movement and a new era for the psychomotor domains. New professionals are prepared to meet the needs of the society. These professionals are carving new territories of research, action, and influence. They are the century's researchers, motor teachers, and facilitators who work more collaboratively with one another and who work in more interactive ways with their students, patients, and clients. This is certainly the case as seen in movement science. Defined as a discipline, and as one of the psychomotor domains, movement science has developed a significant body of cross- and inter-disciplinary research, theories, and knowledge. It has served, in many ways, as a catalyst for new lines of research fostering more collaborative work among researchers. For example, the collaborative research of Esther Thelen, Gregor Schoner, Christien Scheier and Linda Smith, which focuses investigations on the dynamics of goal-directed reaching in infants and on the interleaved dependencies among motor, perceptual, and cognitive development, surely represents pioneering work of the interface of movement science and cognitive science (Thelen et al. 2001). In this decade, we are witnessing closer ties among the psychomotor domains, and stronger linkages between movement science and cognitive science.

This chapter includes six entries. The first two entries focus on the domains of motor development and motor learning. The third and fourth entries concentrate on physical education and adapted physical education, respectively. The fifth domain deals with movement science. And the sixth and final entry is devoted to performative knowledge and a descriptive analysis of skillful performances from a psycho-philosophical viewpoint. What all the entries have in common is a focus on human movement, skill, and skillful performances from a psychomotor perspective.

Linda A. Catelli

MOTOR DEVELOPMENT

Before taking a closer look at motor development, we must first understand what the term development means. Development in its simplest form is a change in

function over time. As such, development encompasses all change, both positive and negative, in the cognitive, affective, and motor domains of human behavior. Understanding development is of keen interest to parents, educators, and coaches, as well as physicians, therapists, and scholars. Development is studied across the lifespan and is viewed in terms of large blocks of time that are frequently studied from the standpoint of prenatal, infant, child, adolescent, and adult development, as well as development in old age. Jack Keogh and David Sugden in *Movement Skill Development* (1985) have appropriately defined development as “adaptive change toward competence.” When viewed from this perspective, development is a lifelong process of adjusting to and compensating for change in an effort to gain and maintain competence across all domains of behavior.

MOTOR DEVELOPMENT DEFINED

Building on Jack Keogh and David Sugden’s definition of development, motor development in its simplest form may be defined as adaptive change toward competence in motor behavior. As such, motor development is studied both as a product and as a process. Knowledge of the products (outcomes) and the processes (underlying mechanisms) of changes in motor behavior over time provide us with information that is vital to understanding the individual on his or her journey throughout life.

In terms of product, understanding motor development first provides us with descriptive profiles of developmental change across the lifespan, thereby providing us with information about the “what” of development. Namely: (1) What are the typical phases and stages of motor development across the lifespan? (2) What are the approximate age-periods associated with typical markers of motor behaviors? and (3) What do we know about predictable patterns of change in motor behavior that are typically seen in normally developing individuals as compared to those who may be either developmentally delayed or developmentally advanced? In short, descriptive views of motor development equip us with a better understanding of what lies ahead in anticipated developmental change.

In terms of process, understanding motor development helps us address the mechanisms that underlie developmental change. We gain information about the “why” and “how” of development. Namely: (1) How does change occur as it does across the lifespan? (2)

Why is developmental change nonlinear and self-organizing? and (3) How do heredity and the environment interact with the requirements of the motor task as one strives for greater motor control and movement competence? In short, a better understanding of the mechanisms that underlie motor development provides us with explanations of why change occurs as it does (Gallahue and Ozmun 2005).

HISTORICAL UNDERPINNINGS

The years from about 1930 through 1945 are characterized as the “maturational period” and those from 1946 to about 1980 as the “normative and/or descriptive period” for the study of motor development. Jane Clark and Jill Whitall in “What is Motor Development” (1989) describe the time period of the 1980s as the “process-oriented period.” In fact, the study of motor development began with a process orientation (studying the underlying biological processes governing maturation), then shifted to a product orientation (describing the mechanics of various stages of movement skill acquisition, and developing normative criteria for a variety of motor performance measures), and subsequently moved back to a process orientation (explaining the processes causing change in motor behavior over time). Important research is now being conducted throughout North America and much of the rest of the world on the critically important topic of motor development from infancy through adulthood.

Maturational Period

As the youngest of the movement sciences, motor development was first viewed from a maturational perspective. Maturation was explained as a process overwhelmingly controlled by internal genetic factors rather than those that are external or environmentally based. The maturation perspective contended that development is primarily a function of inborn biological processes that result in a universal sequence, or stages, in movement skill acquisition. Theorists further contended that although environmental factors might influence developmental rate, the effects were only temporary because of the powerful influence of one’s genetic inheritance.

In an attempt to prove their point, co-twin control studies were introduced as a means of demon-

strating the power of heredity over the influences of the environment. The studies of Arnold Gesell and Helen Thompson (1934) and Myrtle McGraw (1935, 1940) are classics in the use of the co-twin control method of studying development. Their research provided considerable insight into the influence of augmented and restricted practice on the acquisition of various movement skills, and raised numerous questions concerning the effects of early practice.

The contention was that if two infants with identical sets of genes were given different experiences (one with specific training experiences and the other without these specific experiences), then it would be possible to demonstrate the relative influence of both heredity and the environment on learning those skills incorporated into the study design. Results tended to indicate that although the rate at which the children acquired selected movement skills varied somewhat between the twins, the sequence of acquisition was universal and generally invariant.

The results of these studies were the first to examine the sequence of movement skill acquisition in infancy and childhood and at the same time identify differences in the rate of development among those in this age group. As such, they had a profound impact on the study of movement skill learning and, for a time, strengthened the maturational point of view.

Although the surge of research initiated by these scholars was largely motivated by their interest in the relationship of maturational and learning processes to cognitive development, their separate studies attained remarkably similar results, and chronicled the well-known sequences of motor development during infancy. Their naturalistic observations of children provided a great deal of information about the sequential progression of normal development from the acquisition of early rudimentary movements to mature patterns of behavior.

Normative and Descriptive Period

From about 1940 to 1980 a limited amount of work was done in terms of describing the typical motor performance capabilities of school-age children. Led by Anna Espenschade, Ruth Glassow, and G. Lawrence Rarick, these individuals focused on developing age-group norms for children on a variety of motor performance tests (Rarick 1981). Throwing distance, running speed, and jumping for distance

and height are examples of the motor performance items tested and normed for various age groups.

Ruth Glassow also played an important role in a second descriptive movement in which the biomechanics of a variety of fundamental movement skills was described. Lolas Halverson and her colleagues Mary Ann Robertson and William Harper (1973), and Harriet Williams (1985) continued this work with longitudinal observations of children. The important book *Fundamental Motor Patterns*, by Ralph Wickstrom (1983), and the research conducted by Vern Seefeldt and his associates, John Haubenstricker and Crystal Branta (Branta, Haubenstricker, and Seefeldt 1984), on fundamental movement skill acquisition are important because they provided important information for educators relative to age-related change in motor development and set the stage for the exciting research that characterizes the study of motor development today.

Process-Oriented Period

From the early 1980s to the present the emphasis on study in motor development again shifted dramatically. Instead of focusing on the product of development as with the normative and/or descriptive approaches of the preceding decades, emphasis shifted back to attempting to understand the underlying processes involved. Although the critical importance of heredity was recognized, complementary importance was now given to the conditions of the learning environment and the requirements of the movement task. In other words, motor development is now considered to be a dynamic multiple-system process rather than being controlled solely by the central nervous system as in the maturational perspective.

The current process-oriented period was grounded in chaos theory and later extended to physical, chemical, and biological systems. The seminal work of Peter N. Kugler, J. A. Scott Kelso, and Michael T. Turvey in 1982 was the first to apply this theoretical perspective to the control and development of human motor behavior. Three guiding principles underlie what has become known as systems theory or dynamical systems theory. First, as described by Esther Thelen and Beverly Ulrich in *Hidden Skills* (1991), the body is viewed as being composed of several systems (neural, muscular, skeletal, perceptual, mechanical, etc.) that are self-organizing and can form

patterns of behavior that come about exclusively from the interaction of the component parts. Second, the body's systems and its various subsystems self-organize in complex and cooperative ways based on the requirements of the specific movement task and in response to various affordances and rate limiters. Third, development is a discontinuous process with new patterns of movement replacing old ones. These guiding principles serve as the theoretical construct underlying much of the motor development research being conducted today.

CURRENT PERSPECTIVES AND ISSUES

Although research in motor development is generally viewed as the study of change across the lifespan, most researchers restrict their investigations to broad age classifications that are used as marker variables of motor behavior. Researchers therefore tend to focus on the use of infants, children, adolescents, or adults in order to learn more about the causes of change in motor behavior over time.

It is important to know about the products of development in terms of what people are characteristically like during typical phases and stages of their lives (description). It is equally important, however, to know why these changes occur (explanation). To this end many developmentalists are currently looking at explanatory models in an attempt to understand more about the underlying processes that affect development.

Ecological theory, or contextual theory, as it is sometimes called, attempts to be of practical benefit, by being both descriptive and explanatory. Ecological theory views development as occurring as a function of the environmental context and historical timeframe in which one lives. The study of human ecology from a developmental perspective is a matter of studying the relationships of individuals to their environment and to one-another. Currently the most popular ecological approach among motor developmentalists is dynamic systems theory. The following represent a sampling of current research foci:

The study of how goal-oriented behavior develops in infants from their early erratic movement behaviors

The study of delayed motor development in infants with Down syndrome and other developmental difficulties

The study of children with Developmental Coordination Disorder

The study of the benefits and limits of early motor training

The role of physical activity and nutrition in preventing and/or reducing childhood obesity

The influence of intense training on anatomical structure and physiological functioning in preadolescent youth

The influence of balance training with the elderly in reducing the incidence of injury from falls

RESEARCHERS, SCHOLARS, AND MOTOR TEACHERS

Leading the field in motor development are the researchers who answer important research questions and the scholars and teachers who attempt to synthesize these findings and make practical application to individuals across their lifespans.

Prominent Research Scholars

The following represents a partial list of active motor development researchers and the particular age group they study. It should be noted that most of these tend to focus their efforts on infant or childhood motor development. This is due in part to tradition but more importantly to the sheer volume of developmental change that occurs during these relatively short timeframes.

Jane Clark, University of Maryland (childhood motor development)

Daniela Corbetta, Purdue University (infant motor development)

Clersida Garcia, Northern Illinois University (childhood motor development)

Jere Gallagher, University of Pittsburgh (childhood motor development)

Nancy Getchell, University of Delaware (child-

hood through adult motor development)
 Melanie Hart, Texas Tech University (childhood motor development)
 Jody Jensen, University of Texas, Austin (childhood motor development)
 Rosa Angulo-Kinzler, University of Michigan (childhood motor development)
 Robert Malina, Michigan State University (growth and motor development)
 Mary Ann Robertson, Bowling Green State University, Ohio (childhood motor development)
 Linda Smith, Indiana University (infant cognition and motor development)
 Wayne Spirduso, University of Texas, Austin (adult motor development and aging)
 Esther Thelen, Indiana University (infant motor development)
 Beverly Ulrich, University of Michigan (infant motor development)
 Jill Whitall, University of Maryland, Baltimore (childhood through adult motor development)
 Kathleen Williams, University of North Carolina, Greensboro (childhood motor development)
 Wojtek Chodzko-Zajko, University of Illinois (adult motor development and aging)

Textbook Authors

The textbooks written by the authors that follow represent those in primary use in North America and beyond on the topic of motor development. The basic intent of these texts is to synthesize current knowledge on the topic and to provide teachers and students of motor development with up-to-date and relevant information.

Carl Gabbard, *Lifelong Motor Development* (2000)
 David Gallahue and John Ozmun, *Understanding Motor Development: Infants, Children, Adolescents, Adults* (2002)
 Kathleen Haywood and Nancy Getchell, *Life Span Motor Development* (2001)
 Robert Malina, Claude Bouchard, and Oded Bar-Or. *Growth, Maturation, and Physical Activity* (2004)
 Gregory Payne and Larry Isaacs, *Human Motor Development: A Lifespan Approach* (2002)

Motor Development Teachers And Facilitators

Parents, teachers, coaches, and therapists all have a keen interest in understanding and using the information generated by the work of researchers in motor development. A select number of public research universities offer opportunities for advanced study in motor development. These include:

Delaware: University of Delaware
 Illinois: University of Illinois
 Northern Illinois University
 Indiana: Indiana University
 Purdue University
 Maryland: University of Maryland
 Michigan: University of Michigan
 Michigan State University
 Minnesota: University of Minnesota
 South Carolina: University of South Carolina
 Texas: University of Texas
 Texas A & M University
 Texas Tech University

Field professionals are being prepared for careers as teachers, coaches, and therapists at numerous colleges and universities across North America. Some of the very best teacher education programs place emphasis on the importance of understanding motor development and applying that knowledge to developmentally based physical education. These include:

Arizona: Arizona State University
 California: California State University at Bakersfield, Chico, Fullerton, Long Beach, and Sacramento
 Colorado: University of Northern Colorado
 Delaware: University of Delaware
 Florida: University of South Florida
 Idaho: Lewis and Clark State College
 Illinois: Illinois State University; Eastern and Northern Illinois State Universities
 Indiana: Indiana University; Ball State and Indiana State Universities
 Iowa: University of Northern Iowa
 Kansas: University of Kansas; Emporia State University
 Louisiana: Louisiana State University

Massachusetts: Springfield College
 Michigan: Eastern Michigan University
 Minnesota: Bemidji State University; University of Minnesota
 New Hampshire: University of New Hampshire
 New York: Hofstra University; Columbia University Teachers College; Ithaca College
 Ohio: The Ohio State University; Bowling Green, Kent State, and Wright State Universities
 Pennsylvania: Penn State University; Temple University, West Chester State University; University of Pittsburgh
 South Carolina: University of South Carolina and South Carolina State University
 Tennessee: University of Tennessee, East Tennessee State University
 Virginia: University of Virginia, Virginia Tech University
 Wyoming: University of Wyoming

SUMMARY

Understanding motor development and being able to make practical application of both the process and products of motor development are essential to effective parenting, teaching, coaching, and rehabilitation across the lifespan. As the body of motor development knowledge continues to expand researchers provide field professionals with important insights. These insights enable learning to be maximized and development to positively impact infants, children, adolescents, and adults.

David L. Gallahue

MOTOR LEARNING

People perform complex motor skills every day in a variety of contexts. People walk on crowded sidewalks, run while carrying packages to catch a bus, take groceries from a bag and put them into cupboards, hit a tennis ball while serving in a tennis match, kick a soccer ball for a goal, and so on. In each of these situations, the person has acquired the requisite motor skills needed to perform the skill successfully. It is this acquisition of skills that the study of motor learning has traditionally investi-

gated. Researchers have studied motor skill acquisition from various levels of investigation, which range from the behavioral to the neural. The focus of this entry is on the behavioral study of motor learning, which, although historically related to cognitive skill learning, has evolved as a distinct domain of study.

HISTORICAL UNDERPINNINGS

As a scientific area of inquiry, the behavioral study of motor learning is quite young. Formal research investigations of motor skill learning did not begin to emerge until the late nineteenth century, primarily in the newly developing discipline of psychology. According to historical reviews of motor skill acquisition research, it is difficult to identify a specific “founder” of this area of research, although the earliest published research occurred in the 1890s. According to the historical overview by Jack Adams (1987), motor learning research has evolved from that beginning through three distinct historical periods: Early (1880–1940), Middle (1940–70), and Present (1970 to the present).

William Bryan and Noble Harter published the most impressive example of the earliest research. Their experiments examined the characteristics of novice telegraphers and how years of experience influenced their job related skills, which required the sending and receiving of telegraphic messages. In an insightful retrospective of those experiments, Timothy Lee and Stephan Swinnen (1993) described three current areas of motor skill learning for which the Bryan and Harter studies laid important groundwork: performance variation, the nature of change throughout the course of skill acquisition, and automaticity. By observing the sending of messages in American Morse code, which involves the rapid keying of sequences of long and short durations of taps, the researchers provided evidence that motor skill is acquired in distinct stages, each of which has specific performance-related characteristics. And, the attainment of expertise, which they inferred from the comparison of experienced and inexperienced telegraphers, requires time and practice. With respect to these findings, it is important to point out that since that time, the study of distinct learning stages for motor skill acquisition has resurfaced from time to time, with formal models of these stages proposed

first by Paul Fitts and Michael Posner (1967), with additional models proposed by other scholars, most significantly Jack Adams (1971) and A. M. Gentile (1972). It is noteworthy that almost a century after the Bryan and Harter experiments, a rekindling of interest began to emerge, and continues today, in the study of expertise as it relates to motor skills.

The work of Edward L. Thorndike at Teachers College, Columbia University, in New York City (e.g., 1913) had a significant early influence on present-day investigations of motor skill learning. Thorndike's important contribution can be seen in his research concerning issues related to our understanding of transfer of learning and of the role of knowledge of results in learning. With respect to transfer of learning, he proposed and provided research evidence to support the "identical elements theory" as an explanation for this learning phenomenon. That is, transfer of learning is based on the similarities of stimuli and responses in two situations. Increasing the amount of identical stimuli and response characteristics yields increasing amounts of transfer. Thorndike's other significant impact on motor skill learning research related to his Law of Effect, which he supported with experiments involving verbal as well as motor skill learning. Briefly, Thorndike's Law of Effect proposed that when a learner's response receives a reward, the response is strengthened, which increases the probability of that response occurring again. Eventually, with sufficient strengthening, the response becomes the predominant one for the stimulus, and is therefore learned. According to Jack Adams in his discussion of his closed-loop theory of motor learning, it was experiments such as those by Thorndike that provided the foundation for later investigations on the effects of knowledge of results on motor learning (see Adams 1971).

Other investigations prior to World War II focused primarily on topics such as practice distribution, long-term retention, and individual differences. A brief look at the first two of these topics will provide some insight into the manner in which topics were investigated during this early period of motor learning research. The study of practice distribution was of initial interest to determine the influence on performance of rest periods between practice trials. Early studies attributed the negative learning effects of massed practice schedules to fatigue because of the short

amount of rest between trials of active practice. However, with the advent of learning theories by scholars such as Clarke Hull (1943), researchers began to consider practice distribution as a variable that temporarily influences practice performance rather than the long-term learning of a skill. In light of this view, it is important to note that this distinction between variables that influence practice performance and those that influence skill learning continues to be an important one made by present-day motor learning researchers.

World War II was a distinct watershed for motor learning research activity. Prior to this time researchers were often motivated to use motor skills in their experiments as a convenient way to test a psychological construct or general theory rather than to investigate issues specifically related to the learning of motor skills. But, during World War II, researchers from university psychology programs who typically investigated the learning of verbal skills were assigned to military laboratories in which they had to investigate specific human motor skill performance and training issues. One result of this increased focus on motor skill learning was a surge in research concerning individual differences, especially in terms of the relationship between motor abilities and motor skill performance, most notably with regard to the selection of personnel for training to be airplane pilots. However, because these pilot selection programs, which were predominantly based on the identification of motor abilities as the basis for predicting who should be trained to become pilots, had not resulted in a great deal of success, researchers redirected their efforts more toward the actual training of personnel for military tasks.

Although the interest in motor skill acquisition continued for some time after the conclusion of World War II, primarily because of continued government funding for this type of research, psychology scholars in the 1960s began to show a general loss of interest in the study of motor skill acquisition. However, a revival of research activity in this area was generated by researchers in physical education, primarily because of their interests in motor skill learning and performance. Leaders in this effort included Franklin Henry, at the University of California, Berkeley, A. W. Hubbard, at the University of Illinois, and A. T. Slater-Hamel, at the Uni-

versity of Indiana (see Schmidt and Lee 1999). Also influential in the 1960s was the publication of several motor learning textbooks by professors in physical education. In the following decade, Jack Adams, a University of Illinois psychologist who maintained interest in motor skill learning, and Richard Schmidt, who was then in the physical education department at the University of Southern California, published influential formal theories of motor skill learning (Adams 1971; Schmidt 1975). Both theories were based on the information-processing paradigm that predominated the study of human learning at that time. An important impact of the publication of these theories was the stimulation of a great deal of research by a new era of young researchers who now had specific theory-based hypotheses on which to develop experiments. As a result, the study of motor learning rebounded with the publication of numerous research articles concerning topics such as the role of knowledge of results, transfer of learning, and the stages of motor learning.

CURRENT PERSPECTIVES AND ISSUES

Although research topics of present-day researchers are in many ways similar to those investigated prior to the publication of the motor learning theories of Adams and Schmidt, the approach taken differs dramatically. Researchers have increasingly adopted a theory-based, hypothesis-testing basis for their investigations of motor learning topics. For example, Adams's theory focused heavily on the influence of knowledge of results (KR) on initial learning and the eventual lack of need for KR to successfully perform the learned skill. During the decades of the 1970s and 1980s many experiments were reported that investigated and generally supported this hypothesis.

Researchers also reported numerous experiments to test the variability of practice hypothesis that was central to Schmidt's theory (1975). This theory, known as the schema theory, proposed that the control of motor skills should be viewed in terms of the control of "classes of actions" rather than of specific movements. For example, the motor skill of walking can be viewed as a class of actions because it can be performed in different ways, on different surfaces, and at different speeds, without

changing the fundamental coordination characteristics that describe walking behavior. The theory proposed that these classes of actions are neurologically controlled by "generalized motor programs," which provide the essential fundamental coordination characteristics required to perform a class of actions. But, to perform the action in a specific situation, the generalized motor program requires specific movement features, which the theory referred to as movement "parameters," to meet the situation demands. The parameters, which include movement characteristics such as the overall movement speed, are stored in memory in the form of a "schema," which is similar to a concept or a rule. The selection of a parameter level that would be appropriate for performing a skill in a specific performance situation, such as walking speed, is dependent on the strength of the schema. This strength is determined by the amount and variety of practice and experiences with various levels of the parameter. Accordingly, the theory's variability of practice hypothesis predicts that successful performance of a motor skill in any situation is related to the variety of practice experiences associated with the parameter involved. This means that the selection of an appropriate walking speed for a specific situation would be dependent on the amount and variety of previous walking speeds experienced; more variety of experiences results in more successful performance in a new situation. The results of the numerous experiments testing this hypothesis that were reported in the research literature generally verified it.

The Adams and Schmidt theories prevailed as the theoretical bases for the study of motor learning throughout the latter quarter of the twentieth century. However, during this period of time an alternative theory was being promoted and soon rivaled the Adams and Schmidt theories for prominence as an influential force in motor learning research. The dynamical systems theory emerged primarily through the efforts of individuals such as Scott Kelso, Michael Turvey, and Peter Kugler (see Kelso 1995), although the theory initially addressed issues more related to motor control than to motor learning. This theoretical view of the control of coordinated movement grew out of evidence demonstrating that the control of coordination, especially those that are cyclical in nature, is best

demonstrated from the perspective of complex biological systems. These systems change from one stable state to another in ways consistent with nonlinear dynamics. As a result, researchers reported evidence that the control of coordinated movement follows physical and mathematical laws consistent with other complex systems in nature. Notably, research by scholars such as Pier Zanone and Scott Kelso (1994) established that this theory could also be applied to motor skill acquisition.

Although researchers have proposed other motor learning theories, Schmidt's schema theory and the dynamical systems theory have emerged as the predominant influences on research testing motor learning theory hypotheses. Interest in Adams's theory waned dramatically in the latter years of the last century, undoubtedly due to its restricted application to slow, self-paced, discrete movements.

Other influences on present-day motor learning research can be attributed to the behavioral study of motor control. For example, observational learning received a major impetus as a result of an increase in research concerning the role of vision in the control of motor skill. Similarly, research that has investigated issues related to the transfer of learning and part-whole practice has been influenced by motor control research concerned with coordination dynamics.

Finally, the influence of cognitive psychology continues to influence motor learning research interests. This influence can be seen in an examination of three currently popular areas of study—the contextual interference effect, implicit learning, and the focus of attention. Contextual interference refers to the interference that results from the practice of various skills within the context of practice. In motor learning research, the study of contextual interference has involved the investigation of the effect on the learning of multiple skills of various practice schedules that represent different amounts of contextual interference. The “contextual interference effect,” is the learning benefit that results from practicing multiple skills in situations involving high amounts of contextual interference (e.g., a practice schedule that involves practicing the skills in a random order in every practice session) compared to practicing those skills in situations involving low amounts of contextual interference (e.g., a practice schedule that involves

practicing each skill in its own block of trials). The study of the influence of contextual interference on learning had its beginnings in cognitive psychology with the work of William Battig (1979), with the initial application of the effect to motor-skill learning by John Shea and Robin Morgan (1979). Since that time many researchers have undertaken the study of this effect by addressing questions concerning the generalizability and causes of the effect.

The study of implicit learning has its roots in the study of the learning of grammar by Arthur Reber (1967). Research concerning its application to the learning of motor skills has included the learning of complex pursuit-tracking tasks and sequential movements, such as those involved in a serial reaction time (SRT) task. Richard Pew (1974) reported evidence of the implicit learning of motor skill in a report concerning the learning of a pursuit-tracking task that consisted of random and repeated components. Participants improved on both types of components, more on the repeated than the random, and reported no awareness of the repeated portion. However, Pew made no reference to “implicit” learning in that study. Several years later, Richard Magill (1998) reported the replication of Pew's findings and presented a discussion of them in the context of implicit learning as it relates to motor skills. Similar types of effects have been found for SRT tasks, beginning with research first reported for amnesic patients. In these experiments, in which they made the distinction between the learning of “procedural knowledge” (the actual movement “procedures” required to perform a skill) and “declarative knowledge” (the verbal description of what should be done to perform a skill), results showed that people could acquire substantial procedural knowledge of a perceptual-motor sequence in the absence of explicit declarative knowledge. Since that time, researchers have directed efforts toward determining the degree of perceptual versus motor knowledge implicitly and explicitly acquired in SRT tasks. In addition to researchers engaging in empirical investigations of implicit and explicit learning of motor skills, some have incorporated implicit and explicit learning into their theories of motor learning, such as those of A. M. Gentile (2000) and Daniel Willingham (1998).

Research concerning the focus of attention during the learning of motor skills assesses a prediction of the action-effect hypothesis proposed by the German scholar Wolfgang Prinz (see Wulf and Prinz 2001). The hypothesis predicts that actions are best planned and controlled by their intended effects, which means that the learning of motor skills is optimized when the learner's attention is directed to the intended outcome of the skill performance (the action effect) rather than on the movements used to perform the skill. For example, when learning to hit a golf ball, it is better to focus attention on the club head's pathway during the swing rather than on the movements of the arms and legs. This research has developed primarily through the efforts of Gabrielle Wulf and her colleagues and has generated strong support for the hypothesis for a wide range of motor skills (Wulf and Prinz 2001).

PROFESSIONALS WHO APPLY MOTOR LEARNING PRINCIPLES AND CONCEPTS

It would not be possible to develop an exhaustive list of professionals who apply to their practices the theories, principles, and concepts that have grown out of the motor learning research described above. However, to provide a general sense of the practical benefit derived from motor learning research, the following list presents many of the professions that utilize motor learning knowledge in everyday practices.

- Athletic trainers
- Dance teachers
- Fitness instructors (including the instruction of aerobic dance, spinning, Pilates, etc.)
- Music teachers (especially those teaching voice and instruments)
- Occupational therapists
- Physical education teachers
- Physical therapists (also known as physiotherapists)
- Preschool teachers
- Recreation therapists
- Speech therapists
- Sports coaches

Richard A. Magill

PHYSICAL EDUCATION IN THE TWENTY-FIRST CENTURY

The field of physical education has changed dramatically in the past forty years. While once a comprehensive name to describe all aspects of the field interested in human movement and physical activity, today physical education is a narrower term that reflects a vibrant field focused on teaching, curriculum, and teacher education in movement-related areas. In this entry, we address first the historical underpinnings of the field. The next segment focuses on current perspectives and issues, and the final segment summarizes the entry.

HISTORICAL UNDERPINNINGS

As noted above, the field of physical education has changed dramatically in the past forty years. The 1960s and 1970s saw tremendous changes in the field. In the 1960s, all college and university physical education departments were focused on the training of teachers. All undergraduates were enrolled in departments of physical education to teach physical education—primarily in kindergarten to twelfth grade. While some professors in university departments mostly taught, a few conducted research. School physical education programs were directed toward motor skill acquisition and physical fitness with little emphasis on developing good attitudes and lifetime participation in physical activity. Changes in both university departments and kindergarten to twelfth grade schools began in the 1960s and continue today.

The initial changes in physical education departments in colleges and universities often are attributed to the ideas set forth in an article by Franklin Henry in 1964. In that article, Henry argued that, if the field were to survive, university professors would have to engage in research in order to expand knowledge. At the time many, if not most, university faculty members were generalists. Faculty members and graduate students became specialists and the field changed to one in which there are a number of subdisciplines, including exercise physiology, motor learning, motor control, motor development, sociology of sport and physical activity, sport and exercise psychology, and

pedagogy. At the same time, academic departments were changing their names to reflect their new missions and today many departments have names such as kinesiology, movement science, exercise science, and human performance. Most of these departments include the training of teachers as part of a larger emphasis on the study of movement and physical activity. Those who become physical education teachers learn about the subdisciplines and, along with pedagogical knowledge and skill, use this information to be effective physical educators.

As commented on by Stephen Silverman and Catherine Ennis in their book *Student Learning in Physical Education: Applying Research to Enhance Instruction* (2003), the subdiscipline that focuses on teaching, curriculum, and teacher education now is often referred to as “sport pedagogy.” This area represents both research on teaching, curriculum, and teacher education in physical education, and the practice of teaching, teacher training, and curriculum development. In both research and practice there have been many changes over the past decades. Amelia Lee, in “How the Field Evolved,” characterized the changes that are summarized in the next few paragraphs (Lee 2003).

Physical education teaching, curriculum, and teacher education were not research-based fields when the field began to change. There was very little research and very few faculty members pursuing research agendas. In the mid-1970s Lawrence Locke in an important essay, “Research on Teaching Physical Education: New Hope for a Dismal Science,” suggested that the field had made some gains, but had a long way to go (1977). In the intervening thirty years, a great deal of focused research has been conducted and there are many researchers who helped advance our knowledge and informed the work physical education teachers do. For example, we know a great deal about the factors that impact student motor skill learning. We now know that when students are highly engaged and their practice is successful they tend to develop motor skills; that the development of a positive attitude toward physical education and motivation greatly influences a student’s participation in physical activity (physical education plays an important role in the development of attitude and motivation—unfortunately, not always in a positive direction); and that teachers’ values, beliefs, and other contextual factors influence what is taught

and learned in physical education. Research has resulted in a large knowledge base that both extends our understanding of school physical education and provides information for implementing more effective physical education programs.

While university departments of physical education were changing, so were kindergarten to twelfth grade physical education programs. Most physical education programs once focused solely on learning skills to play sports and games. Today, however, many physical education programs are directed toward learning skills, knowledge, and attitudes that will help students to lead a physically active lifestyle and become a responsible member of society. Physical education programs have changed dramatically in many communities. The uniforms and straight lines of the past have now been replaced by student-centered teaching methods, curricula that develop confidence and respect for others, and a focus on activities that students enjoy and are likely to continue outside of physical education class. Sadly, not all schools have changed curricula and teaching methods, but those that have a focus on different goals than in the past will likely have students leave those classes with better skills, knowledge, and attitudes for a lifetime of physical activity.

CURRENT PERSPECTIVE AND ISSUES

The changes in the field of physical education have resulted in many new practices in schools. At times, outside factors, such as a focus on school accountability, have impacted the field as much as internal factors have. School and community context, as portrayed in LeaAnn Tyson Martin’s work “Context, of Schools,” strongly influence what goes on in physical education—as it does other school subjects (Martin 2003). Of the many current issues or themes in physical education, the following are among the more important: (1) standards-based curriculum development in physical education; (2) current curricular approaches in physical education; and (3) a focus on student development.

Standards-Based Curriculum Development In Physical Education

In virtually every area of school practice, standards have been developed to guide what is taught and

assessed in the subject matter. In physical education, national standards were released in 1995 by the National Association for Sport and Physical Education, the main professional organization for physical educators and a component of the American Alliance for Health, Physical Education, Recreation and Dance. These standards focus on all areas of content development. The seven standards suggest that a physically educated person: (1) is competent in a number of movement forms and is proficient in a small number; (2) can use the knowledge about movement; (3) has a physically active lifestyle; (4) is physically fit; (5) exhibits responsible personal and social behavior while participating in physical activity; (6) understands differences and shows respect for others; and (7) understands how physical activity can enhance their life. These standards, developed by physical educators, are ambitious but a school physical education program that is aligned across grade levels and focused on reaching them can greatly influence the lives of children.

The national content standards in physical education have influenced the development of many state standards for physical education. An analysis of any state's content standards for physical education likely will show goals related to motor skill development, knowledge and attitude development, responsibility and respect for others, physical fitness, and, perhaps most importantly, the promotion of a physically active lifestyle. If children learn skills in physical education but then do not participate in physical activity after they leave high school, the physical education program has not helped those children be physically active and derive the benefits from a physically active lifestyle.

Content standards are often used to measure accountability. In order to do that teachers and administrators must measure whether students have met the standards at various points during their education. In most states, each school district develops its own plans to measure whether students have reached the content standards. In a few states, most notably South Carolina and New York, statewide assessment programs are being developed for public school physical education. Statewide assessment has the potential to provide a broad picture of whether and how students are mastering content standards.

Current Curricular Approaches In Physical Education

Although some schools are still employing the content and teaching methods of the past, many physical education programs are designed in ways and have an emphasis that is more contemporary. The perspective on curriculum and teaching has changed to reflect different goals and an understanding that student development goes beyond skill development and participation in sport. This section highlights: (1) curricular approaches in elementary schools; (2) integrating physical education with other subject matters; (3) contemporary approaches to teaching sport; (4) health-related physical education; and (5) teaching social and personal responsibility in physical education.

Curriculum in elementary school physical education is less focused on sports and games than in the past and more focused on learning skill that is transferable to a number of activities. Many physical educators believe that teaching and participating in specific sports early in the school experience results in many students engaging in sports and games before they have the needed skill to be successful. If students are unsuccessful they may develop negative attitudes about their abilities and this may influence their future participation in physical activity. One approach used by many physical educators is the skill theme approach that was suggested by prominent educators George Graham, Shirley Holt/Hale, and Melissa Parker (2004). In this approach, students gradually learn skills and apply them in different situations and contexts. Students develop skills and learn movement concepts, in ways that are developmentally appropriate.

In many elementary and secondary schools, physical education content is being integrated with other content matter. This occurs in a number of ways. For example, physical education and social studies teachers may integrate a unit on Native Americans where students in physical education learn about physical activity and games that were a part of Native American life in their area of the country. Or a science teacher might work with the physical education teacher to integrate curriculum about the effects of physical activity on the body in ways that are complementary and thus help students learn both science and physical education concepts. The

effective use of integrated curriculum is far more complicated than these simple examples. Judith Placek (2003) in “Interdisciplinary Curriculum in Physical Education: Possibilities and Problems,” and Theresa Cone, Peter Werner, Stephen Cone, and Amelia Woods in their book *Interdisciplinary Teaching Through Physical Education* (1998) have provided professionals in the field with excellent overviews of the issues and development of integrated curriculum.

The teaching of sport was once the major—some would say sole—focus of physical education. Students entered physical education class and learned skills and mostly played team sports. Sport still is an important focus of physical education, but how sport is taught and what is learned has changed. In an ideal setting, students will have learned basic motor skills that are relevant to sport participation prior to learning specific sports. Students who have basic movement skills can then learn how to modify and apply them to specific sports, while learning other aspects of sport participation.

A number of contemporary approaches now are being employed to teach sport to children. These approaches go by different names (e.g., teaching games for understanding, tactical-games approach, and sport education) and there are differences among the approaches. While to some the differences may be large, the biggest difference is with the traditional way many of us learned sport in physical education. In these approaches, students do not practice isolated drills and then participate in games. Students in contemporary approaches learn tactics and strategies while learning skill, they understand a variety of aspects of the sport, and participate in the sport in various capacities. Units are typically much longer than two or three weeks and this increase in time permits opportunity for more authentic learning. These approaches are a radical change from the past, but for many students a welcomed change from units that focused on game play with little actual learning.

As noted earlier, two of the national content standards for physical education focus on becoming physically fit and maintaining a physically active lifestyle. There have been many approaches to teaching health-related physical activity so that children will have the knowledge and skills to become fit, participate in physical activity, and enjoy it so they continue to

participate after graduating from high school. Thomas McKenzie has been recognized as a leader in developing and evaluating curricula in this area (2003). One such curriculum, Sport, Play, and Active Recreation for Kids (SPARK), addresses many aspects of health-related physical activity—in physical education, in classrooms, and in the community and home (SPARK 2004).

The focus on a physically active lifestyle has been addressed in many reports and, most notably in the 1996 Surgeon General’s report on physical activity and health, *Physical Activity and Health*, and in *Healthy People 2010* (U.S. Dept. of Health and Human Services 2000). Since physical activity has an impact on health, the role of physical education in promoting physical activity cannot be overstated. Physical education programs that promote physical activity have the potential to influence students throughout their life. Physical education programs that create poor attitudes toward physical activity—even if they help students get fit—unfortunately will also have a lasting influence. The recent focus on being physically active throughout life requires teachers to design or utilize curriculum and teaching methods that do not turn children off to future participation.

Another one of the national content standards for physical education focuses on personal and social responsibility. Don Hellison, scholar and educator, has been a leader in using physical activity to promote personal and social responsibility. His framework, as described in his book *Teaching Responsibility Through Physical Activity* (2003), has been implemented and adapted in thousands of schools across the country. The general approach is to use physical education to help students develop into productive adults. Games and physical activity, valued by many children, provide a venue for helping children develop as personally and socially responsible individuals. Hellison’s model and framework utilizes physical activity to guide students to become caring adults. This goal is important and physical education teachers have a unique medium to help students achieve it.

While each of these curricula can be and have been used independently, aspects of each can be combined to address a number of goals in physical education. In some situations, teachers have a specific focus (e.g., personal and social responsibility) and concentrate

on that. In other situations, it may be beneficial for teachers to combine aspects of various approaches to create a context specific curriculum to meet the goals they would like to achieve.

Focus On Student Development

As can be seen from the curricula discussed above, development of the individual child is an important focus in physical education. In many respects the development of attitude and motivation are as important as the development of skill. In many communities, high school curricula are being changed so students can enjoy participation in activity that will carry over to making choices to engage in activity in the future. Teaching for skill mastery or fitness without concern for an individual student's attitude and motivation will only reach limited goals. For example, a high school physical education program that focuses on group fitness activities (e.g., aerobics classes) may not help those students who are more inclined to participate in physical activity in other ways (e.g., walking, running, or bicycling). Teachers who provide programs that negotiate the difficulties of helping students to learn and experience success in activities they enjoy are more likely to have a greater influence on whether the student maintains a physically active lifestyle.

THE NEW PHYSICAL EDUCATOR

Physical education has changed from one focused on skill development, sport, and fitness to a subject matter that promotes many goals. Physical educators today want students to learn skill and feel efficacious about participating in physical activity; to become fit, but in ways that promote good attitudes and promote an active lifestyle; to have the knowledge and skills to participate in physical activity; and to display responsible behavior in physical activity and other settings. To accomplish this, teachers are employing curricular approaches and teaching and assessment methods that help them reach these goals.

The field has grown and has been informed by a substantial research base and by innovations for practice. The future of physical education requires differing approaches from those used in the past. The

development of a physically active lifestyle is a personal decision for each student—and requires a physical educator to help each participate in learning experiences that promote good decisions.

Stephen Silverman and Kristin Scrabis

ADAPTED PHYSICAL EDUCATION

The past century has witnessed a major shift in the way society views people with disabilities. Rather than being considered a burden to society, people with disabilities are now considered individuals who possess a different set of abilities than the majority of the population. Our current perspective is that people with disabilities have unique skills and abilities that need nurturing. Physical education and/or physical activity enable individuals with disabilities to engage in activities that contribute a sense of well being.

HISTORICAL UNDERPINNINGS

Prior to the 1900s physical education programs had a distinct medical orientation. Many of the early leaders were physicians. Two pioneer physicians who promoted physical education and especially its role in serving persons with special needs were Dio Lewis and Dudley Sargent. In 1860, Dr. Dio Lewis introduced a system of gymnastics in Boston. Lewis was interested in the weak and feeble persons in society. He aimed at developing agility, grace of movement, flexibility, and improving general health and posture. Dudley Sargent earned his M.D. at Yale in 1878 and then opened a private gymnasium in New York City called the Hygiene Institute and School of Physical Culture. In 1879, Sargent became Director of the Gymnasium and Assistant Professor of Physical Training at Harvard. Sargent's work targeted those students most needing physical training and offered individualized exercise programs (Gerber 1971).

Organized physical education programs as part of the school curriculum in larger urban areas such as Boston and St. Louis began to appear early in the 1850s. In 1885, in Brooklyn, Edward Hitchcock organized the American Association of the Advancement of Physical Education. Physical education

programs during this period largely consisted of gymnastics that had been developed in Sweden, Germany, and Denmark. Advocates of each system did their best to spread their particular program and attempted to have their program incorporated as part of the school system. The Swedish system had more popularity in the East and the German system was more prevalent in the Midwest. The early 1900s were characterized by a transition to a sports-oriented physical education. The period between the world wars and into the 1950s resulted in an increase in the importance of physical fitness in school physical education. Thus, by the early 1950s the medical focus, the sports emphasis, and the fitness movement had created a broad definition of physical education with an array of activities.

The term “corrective” or “remedial physical education” was commonly used in the 1930s–1960s to describe restricted or modified activities related to health, posture, and fitness problems. During this time period wheelchairs became a prominent feature in rehabilitation programs for war veterans. Sir Ludwig Guttman established Europe’s first organized wheelchair sports program in 1948 at the Stoke-Mandeville Spinal Cord Injury Center in Britain. Timothy Nugent pioneered wheelchair sports in the United States at the University of Illinois with wheelchair basketball. The American Association for Health, Physical Education and Recreation defined the field of adapted physical education in 1952 with the following statement by the Committee on Adapted Physical Education:

Adapted physical education is a diversified program of developmental activities, games, sports and rhythms suited to the interests, capacities and limitations of students with disabilities who may not safely or successfully engage in unrestricted participation in the vigorous activities of the general physical education program. (Committee on Adapted Physical Education 1952)

Two related professional fields are kinesiotherapy and therapeutic recreation. Both professions provide services for individuals with disabilities but generally focus on adult programs whereas adapted physical education programs are based in public schools.

Kinesiotherapy was formerly named corrective therapy and is considered an allied health profes-

sion. This profession began during World War II and initially provided physical reconditioning for injured soldiers. A kinesiotherapist administers therapeutic exercise or activity based on a treatment plan. Therapeutic exercise can consist of a variety of strengthening, endurance, and flexibility prescriptions.

Recreational therapists are health care providers using recreational therapy interventions for improved functioning of individuals with illnesses or disabling conditions. The primary purpose is to provide recreation resources and opportunities to improve health and well being. The American Therapeutic Recreation Association was formed in 1984 and there were approximately 38,000 recreational therapists in 1996 according to the U.S. Department of Labor, Bureau of Labor Statistics (Muns 1998). The recreation therapist conducts assessments to determine an individualized treatment plan, develops goals and objectives for the plan, implements the recreational plan, evaluates the effectiveness of the treatment plan, and develops a discharge plan in collaboration with the patient/client.

CURRENT PERSPECTIVES AND ISSUES

Adapted physical education (APE) teachers teach children with disabilities who have a variety of physical and mental skill levels in the public schools of the United States. The specific professional practices of adapted physical educators have been shaped by special education policies that have always included a multidisciplinary approach to providing educational services. Understanding the specific needs of each child requires that the APE teacher consult with other professionals such as physical and occupational therapists, speech and language pathologists, school nurses, and classroom teachers.

Adapted physical education is defined by federal legislation that has affirmed the rights of students with disabilities to a free and appropriate public education. Each of these legislative actions has resulted in greater access and participation of individuals with disabilities in physical education programs. Access to programs and facilities was provided by section 504 of the Rehabilitation Act of 1973 (P.L. 93–112). The most significant federal legislation that mandated free and appropriate education for children with disabilities was P.L. 94–142, the Education of All Handi-

capped Children Act of 1975. This law specifically stated that physical education was to be an integral part of the educational program of the individual with a disability. Essentially this law ensured that the adapted physical education profession would become a viable member of the special education professional delivery system.

The federal legislation identified the Individual Education Program (IEP) as the cornerstone of special education. The IEP is a statement that must be prepared for any child with a disability and is jointly prepared by all persons directly concerned with the education of the child, including parents. The concept of the “least restrictive environment” presented in the legislation required that children with disabilities be educated with typically developing children. Special classes and separate schooling may still be used as alternatives but only when the severity of the disability and the need for specialized support services warrants this separation. In the late 1980s and early 1990s the term “inclusion” was used by parents and educators who wanted a stronger focus on the implementation of the least restrictive environment with students in general education classes and attending their neighborhood school. In this perspective, inclusion must be more than a placement or a specific program, it is an attitudinal and teaching philosophy that provides all students with appropriate educational programs geared to their abilities and needs with the support and assistance to achieve success.

In 1986, Congress passed the Education for all Handicapped Children Amendment of 1986 (P.L. 99–457). This law focused on early intervention services for individuals with special needs from birth to two years of age, and expanded services for three-to-five-year-olds. Preschool physical education programs were expanded in response to this legislation. In 1990, Congress passed P.L. 101–476, the Individuals with Disabilities Education Act, and combined previous legislation into comprehensive legislation directing the delivery of special education services. The preferred term “individuals with disabilities” was used to indicate professional concerns about the word “handicapped,” with its focus on deficits rather than abilities. This law has been reauthorized most recently in 1997 and provides the guiding principles for the national delivery system for adapted physical education in schools throughout the country. There is no

doubt that from the 1970s to the present, federal laws have contributed to the development of programs of adapted physical education. In this context, the adapted physical educator delivers services through consulting and acts as a resource to other teachers, in addition to providing direct physical education services.

Since the 1970s, the number of individuals with disabilities participating in competitive sports has increased. The Amateur Sports Act of 1978 (P.L. 95–606) charged the United States Olympic Committee with encouraging provisions for sporting opportunities for individuals with disabilities in athletic competition. This effort helped create the Committee on Sports for the Disabled in 1983. Participation in national and international competitions continues to rise in events such as the World Games for the Deaf, World Wheelchair Games, and Special Olympics. In 1968, Eunice Kennedy Shriver founded Special Olympics and hosted the first International Special Olympic Games at Soldier Field, Chicago. Special Olympics was created through the Joseph P. Kennedy Jr. Foundation for the benefit of individuals with mental retardation.

The concept of full inclusion was originally viewed in the context of an educational placement, such as in a general education classroom. However, the term *inclusion* has developed a broader interpretation since the 1980s. Various initiatives now support the concept of empowerment of individuals with disabilities to adopt a physically active lifestyle. For example, the Centers for Disease Control and Prevention sponsors a program on promoting the health and wellness of women with disabilities. Other national and international organizations such as the World Health Organization’s Active Living Program and the Paralympic Games focus on the importance of physical activity for all.

Healthy People 2010 identified specific health issues warranting special attention for people with disabilities (U.S. Department of Health and Human Services 2000). This report recommends specific interventions to improve the health and wellness of people with disabilities to prevent the development of secondary conditions. For example, a person with limited mobility has a high risk of developing secondary conditions such as low back pain as a direct consequence of the initial disability. In an effort to support the research and development of interventions that promote the health and wellness of per-

sons with disabilities, the National Center for Chronic Disease Prevention and Health Promotion provided funding opportunities in this area in 2003.

Despite an emphasis on inclusion, our society tends to impose labels on individuals who are perceived to be mentally, emotionally, and socially different. Historically individuals with a disability have been classified, categorized, and provided with programs based on a disability. The challenge for all teachers is to plan educational programs based on the individual and the performance of that individual in the learning environment. Although initiatives and federal laws can support inclusion and opportunity, it is at the grass roots level that individuals with disabilities are supported and educated.

One challenge facing adapted physical education is the professional relationship between the general physical education teacher and the adapted physical education specialist. In a collaborative model, the two teachers should be equal partners in developing the instructional program for children with disabilities. However, in some cases the general physical education teacher may believe the specialist should be responsible for instructional decisions for children with disabilities. How well these two professionals work together can be a key factor in creating an effective learning environment for all students including those with and without disabilities.

The second major challenge concerns accountability. Physical education programs are often viewed as not needing an assessment program that focuses on student performance. In some cases, individual states have not defined grade level performance standards or benchmarks. The goals and objectives of physical education programs may not be consistent and in the current educational climate that emphasizes student performance in the core curriculum, physical education programs may often not be valued as highly as other subject areas. Consequently, the APE teacher needs to serve as an advocate for physical education programs for children and youth with disabilities.

MOTOR TEACHERS AND FACILITATORS

Adapted Physical Education (APE) teachers teach toddlers, children, and youth with all types of disabilities including those with severe disabilities. They are skilled in examining results of medical, psychologi-

cal, sociological, and educational assessment and planning, teaching, and evaluating appropriate physical education programs. APE teachers are proficient in identifying what kinds of physical activities are appropriate for each disabling condition. Safety is a priority in planning activities. For example, a child with Down Syndrome should be checked for atlantoaxial instability before engaging in sports and games that involve rapid movements of the neck.

APE teachers have personal qualities that enable them to provide physical activity programs for those with the most severe disabilities. They are patient with students who learn at a slower pace. Many teachers are creative and develop pieces of equipment for the unique needs of children. With the trend toward inclusion, APE teachers use professional skills of consultation and collaboration to assist other teachers and parents in developing appropriate physical education programs. In particular, the APE teacher works closely with the general physical education and classroom teachers to ensure students with disabilities are well served.

According to the most recent report from the U.S. Department of Education, Office of Special Education Programs, a total of 5,432 adapted physical education teachers were utilized in the United States in the 1999–2000 school year. These teachers provided special education services for children and youth with disabilities, ages three to twenty-one. The greatest portion of these teachers (1,058) were employed in New York State with the second-largest number of 811 being hired in California (U.S. Department of Education 2001).

This data may be influenced by how states determine who is qualified to teach students with disabilities. Individual states determine appropriate qualifications for adapted physical educators. Currently thirteen states (AK, AL, CA, FL, IN, KS, LA, MI, MN, MS, ND, OH, WI) have an endorsement and/or certification requirement in adapted physical education that is required for employment. In other states, failure to define who is qualified has given schools the option of deciding if these services will actually be provided and who will provide them.

In California, adapted physical education is a designated instruction and service. This is established under California Education Code (Section 56363). California's special education delivery system and funding model is categorical in nature and based on the specialized instruction and intensity of services needed by each indi-

vidual pupil. The range of instruction consists of special day classes, resource specialist programs, designated instruction and services (including adapted physical education) and nonpublic school units.

The knowledge base used by adapted physical educators is cross disciplinary, encompassing the areas of sports medicine, physical education pedagogy, motor learning and development, exercise science, special education, psychology, behavior management, and lifespan human growth and development. A wide range of physical activities such as sports, dance, aquatics, physical fitness items, and leisure pursuits are used to accomplish specific objectives for a person with a disability. Adapted physical education programs at universities are housed in kinesiology or physical education departments and adapted physical education is a concentration and/or emphasis area in a kinesiology or physical education degree program.

Many universities offer concentrations in adapted physical education at the undergraduate or graduate level, and many have a strong tradition in adapted physical education. One characteristic of many of these university programs is that they offer physical education, sport, and recreation clinics for children and youth in their local communities and this provides a clinical training ground for prospective adapted physical educators.

The field of physical education has been historically associated with competitive sports and games. Although the emphasis on lifetime physical activity is emerging as the most significant outcome of a physical education program, competition is still a prominent feature. Given this backdrop, the APE teacher has to constantly support the inclusion of children with disabilities into a sport environment in which they may not fare well in comparison to peers. In an effort to support participation of children with disabilities the APE teacher often focuses on disability awareness activities, developing social skills, and helping address the stereotypical attitude that children with disabilities have nothing to contribute.

The profession of adapted physical education is supported by the journal *Adapted Physical Activity Quarterly* (APAQ). This journal has been published since 1984 and includes a strong emphasis on original research. In a review of the scientific subject areas that were included as APAQ articles in 1984–2000 the following topics were the most commonly covered: assessment/classification, pedagogy/program-

ming, physiology/physical activity, sport psychology, and motor learning/control. APAQ is the official journal of the International Federation of Adapted Physical Activity and is extensively used by university programs preparing individuals to enter the profession of adapted physical education. Two additional journals, *Palaestra* and *Sports 'n Spokes*, are used by APE professionals.

The profession has also benefited from the Adapted Physical Education National Standards (APENS) project that is designed to ensure that physical education instruction for students with disabilities is provided by qualified physical education instructors. Sponsored by the National Consortium for Physical Education and Recreation for Individuals with Disabilities (NCPERID), APENS provides professional certification. The APENS exam consists of one hundred multiple choice items designed to measure knowledge of human development, motor behavior, exercise science, measurement and evaluation, history and philosophy, unique attributes of learners, curriculum theory and development, assessment, instructional design and planning, teaching, consultation and staff development, student and program evaluation, continuing education, ethics, and communication. The first exam was taken by 224 teachers in 1997. Teachers passing the exam are certified for seven years and can officially use the acronym CAPE after their names to designate their professional status.

As related by authors A. W. Burton and D. E. Miller in *Movement Skill Assessment* in 1998, the profession of adapted physical education has greatly contributed to the body of knowledge in assessment of movement skills. The assessment of physical skills has roots dating back to the work of neurologists and physicians in the developing field of physical education in the latter part of the nineteenth century. A landmark publication in 1927 was the book *Measuring Motor Ability: A Scale of Motor Ability Tests* (Brace). Using this scale, a single summary score reflected a person's performance on twenty physical activities. The emergence of the professions of occupational and physical therapy has created a variety of assessment instruments developed to assess daily living skills and motor capabilities. With the passage of the Education of All Handicapped Children Act in 1975, assessment tools were developed to enable the professional to measure all as-

pects of motor performance. Many of the currently used tests were initially developed well before 1975. The Bruininks-Oseretsky Test of Motor Proficiency was created in 1978 from the Oseretsky Tests of Motor Proficiency developed in 1946 (Bruininks 1978). The Denver Developmental Screening Test (DDST) was first presented by W. K. Frankenburg and J. B. Dodds in 1967, and published in 1969. It was revised in 1975 and 1990. The DDST examines development in gross motor, language, fine motor-adaptive, and personal-social areas for children from birth to six years.

Most recently, a National Center on Physical Activity and Disability website (www.ncpad.org), presented by the Department of Disability and Human Development at the University of Illinois at Chicago, has been created to support the work of adapted physical educators. Concerned with physical activity and disability, it provides information on a vast array of topics to support and encourage physical activity participation. Examples include resource directories, fact sheets, monographs, calendars of meetings, media coverage, discussion groups, online media presentations and a monthly newsletter. This website has provided essential support to individuals with disabilities who are seeking a physically active lifestyle.

The professionalization of the field of adapted physical education has been evolving steadily in the last three decades. However, the field will need to respond to the following challenges. A primary challenge is to maintain quality physical education programs in public schools that effectively include children with disabilities. This will require that all physical educators have the necessary skills and abilities to implement developmentally appropriate programs. The second challenge is to maintain the progress that has been made in providing access for individuals with disabilities to facilities and programs in schools and communities. If individuals with disabilities are to gain the benefits of a physically active lifestyle, greater support from society at all levels is necessary. Individuals with disabilities often experience poorer health, shorter lifespans, and less access to professional health care. Providing more physical activity and recreation programs in community settings would serve the health needs and contribute to the well being of these individuals.

Christopher Hopper

MOVEMENT SCIENCE

The term “movement science” has been used to characterize emerging and successful efforts to establish an interdisciplinary focus for the study of movement and to recognize the impact of cognitive sciences in that study. Throughout the late 1970s and early 1980s discussions about the difficulty for individuals with different perspectives of movement to communicate across domains led to efforts to design crosscutting research that viewed the moving individual more holistically. Thus, performance outcomes could be aligned with biomechanical analysis of changes in movement and arousal levels monitored to determine impact of and effects on performance and learning. The moving individual learner/performer was viewed as a complex system and all elements affecting the effectiveness of that system had value for simultaneous study. It was further recognized that the study of movement must include assessment of the environment, task difficulty, and performer expertise.

The trend toward defining movement sciences as the coordinated interaction of various systems is obvious in the program descriptions of departments of movement sciences. Several programs (for example, that at the University of Michigan) define movement science as the study of the causes and consequences of human movement including behavioral, biological, and mechanical factors. Others define topics and the types of questions addressed by faculty and students. For example, such topics include: how individuals initially acquire motor skills; what changes take place over time with practice in varying types of environments; how movement and coordination develop in children and in young and older adults; and how the acquisition and development of motor skills occur with disabled and diseased individuals (University of Texas at Austin).

PERSPECTIVES AND RESEARCH

Several research programs were developed in the 1970s and 1980s that focused on exploring motor performance through simultaneous measurement of multiple systems. One of the earliest efforts used a head-mounted camera to film the visual environment as seen by a hockey goalie during a scrimmage (Bard

and Fleury 1976). A complex device enabled the researchers to determine where the player was looking. The most successful players looked at open space. They found similar results in a series of still photos shown to novice and expert basketball players; the greater the expertise, the more likely that vision was directed at open spaces. Also in 1972, Joseph Higgins and Ree Spaeth had subjects throw darts at a target moving at several speeds with the view of the target constrained (Higgins and Spaeth 1972). They filmed their performances and analyzed movement as related to consistency and accuracy of outcomes. More recently, evidence can be shown for the use of biomechanical measures, visual measures, and physiological measures along with performance outcomes. The first three of the following subparagraphs present a sampling of these studies. In a fourth, some tools that might be useful for future research are reviewed.

Biomechanics and Performance

Paul Treffner et al. (2002) took multiple measures of postural stability, perceptual sensitivity, and stability of driving performance and determined that increased postural stability improves driver attention and road safety. Olivier Ouiller et al. (2002) measured performance of a tracking task, postural coordination in the hip and ankle joints, and head movement using stationary and moving targets in a moving room. Coordination modes adopted by subjects depended on the frequency of motion of the moving room. Hip-ankle coordination was similar for both tasks. B. Vereijken et al. (1997) inferred changes in coordinative structures in a complex skill using a 3-D electronic camera system that yielded apparatus dynamics, apparatus-participant dynamics, and participant dynamics. Delphine Delay et al. (1997) examined force and accuracy in golf putting to distances of one, two, three, and four meters. Club movements were recorded using a SELSPOT motion analysis system to accurately track wrist motion. As target distance increased, the downswing amplitude was increased but time remained constant.

Visual Factors and Performance

Gordon Binstead et al. (2001) recorded hand movements, reaction time, and eye movements in goal-directed aiming. They concluded that functional interactions between perception and action systems

occur during the organization and control phase. Digby Elliot et al. (1999) used muscular impulses with accuracy of performance to assess need for visual information during rapid aiming movements. They noted that the characteristics of the movement change directly with the availability of visual information.

Physiology and Performance

B. S. Lay et al. (2002) measured physiological parameters (oxygen uptake, metabolic energy expenditure, and muscle activation), as well as motor performance parameters, to determine if skilled motor performance was associated with lower energy expenditures. They found that practice reduced the metabolic energy cost of performance and practice-related refinements led to significant reductions in muscle activation.

Research Tools

Jorge Ambrosio et al. (2001) developed a process to spatially reconstruct movement using a single camera and a computerized biomechanical model. Vasilios Kyriazis (2001) invented an inexpensive telemetric system for analyzing footfall timing and speed. Although intended for use with orthopedic patients it might be adapted for movement science purposes. Jacques Temprado et al. (1997) measured intra-limb coordination of the serving arm in volleyball. Though they did not compare coordination to ball placement success, this method has promise for future use.

THE INTERFACE OF COGNITIVE SCIENCES AND MOVEMENT SCIENCES

Three lines of inquiry and theory lead to the interface of cognitive sciences and movement sciences as we experience it today. One line can be traced through E. C. Poulton (1957), George A. Miller, Eugene Galanter, and Karl H. Pribram (1960), P. M. Fitts (1964), J. A. Adams (1971), and R. A. Schmidt (1975). A second line of inquiry begins with A. Newell and H. A. Simon (1972), E. L. Lindquist (1968), and A. M. Gentile (1972). The third aspect relevant to the relationship between cognitive science and motor learning draws from the ecological psychology work of J. J. Gibson (1966, 1986), M. T. Turvey (1977) and D. G. MacKay (1987).

An early attempt to postulate and model the per-

ceived link between cognitive science and movement was Miller, Galanter, and Pribram's (1960) TOTE model. They described a Test-Operate-Test-Exit model and applied it to motor skills (pp. 81–93). The learner is provided a cognitive strategy or overall plan for skilled performance but must develop the tactics to execute the strategy successfully. Through practice, they postulated, the learner combines the tactical details into a larger motor unit using feedback to reduce the discrepancies between intended and actual performance. They suggest that:

Both skills and instincts are ongoing patterns of action, directed toward the environmental conditions that activate and guide them and organized hierarchically into action units with more than one level of complexity . . . some theoretically machinery . . . as the TOTE hierarchies envisioned here would seem to be indispensable. (p. 93)

While the TOTE model suggested that practice led to more skilled performance, Fitts (1964) postulated a three-stage model of skill learning that sought to describe novice to expert transitions. The three stages were cognitive, associative, and autonomous. In the cognitive stage the learner identifies or is helped to identify the parameters of the task. In the associative stage (invariably the longest stage) perceptual factors and movement factors are linked as a cognitive set. In the autonomous phase skilled performance becomes automated, able to be run off without significant cognitive engagement.

The preceding model theories were unique but were lacking in that they could not be tested. Adam's closed loop theory of motor learning (1971) and Schmidt's schema theory (1975) made the critical link between theory and research as they hypothesized observed behaviors predicted by their conceptions of motor learning. Schmidt incorporated principles of Adam's closed loop theory and Poulton's (1957) open loop theory to formulate his model. This model has been tested repeatedly and continuously since its initial presentation.

The second line of inquiry is based on an information processing model using a general problem-solving approach (Newell and Simon 1972), applied to learning a motor skill (Lindquist 1974), and proceeding to a more developed composite model of information processing (Keele 1968) that incorporated memory (Marteniuk 1976) and a composite

taxonomy of motor skills (Gentile 1972). The composite taxonomy of motor skills was a critical element in addressing the cognitive elements of movement as it was shown that task complexity changed as a function of the environment and the movement complexity. Spaeth-Arnold (1981, 14–30) provides a good review of motor skill taxonomies.

Newell and Simon developed an approach using protocols of learners' verbal "think aloud" comments to determine how individuals work through subgoals and discrepancies to better approximate the desired behavior. They suggest that the problem solver creates an internal representation of the problem, selects a particular method of approach, applies the method, evaluates the outcome, and tries another method or changes the representation, or abandons the problem, and finally may produce new subgoals in approaching a solution of the overall problem.

Lindquist tested their approach by using the tennis serve (1968). Applying the General Serve Problem Solver (GSPS), she noted that three properties of the tennis serve are uppermost: the horizontal and vertical position of the ball and the position of the racket face. Other properties of the serve are tested in relation to these. Her dissertation is a masterful analysis of the thought and information-processing patterns of a single subject and it demonstrates that the problem-solving, information-processing approach is applicable to the learning of a motor skill—the tennis serve.

Gentile (1972) presented a taxonomy of motor tasks intended to classify motor skills in two dimensions as a way of describing levels of task difficulty within and among categories. Spaeth-Arnold (1981) applied this taxonomy to activities for children as a way of controlling for task difficulty and information processing load. The dimensions on which the taxonomy is based are: body stability vs. body transport, secondary manipulation of objects, and nature of the environment (spatial constraints versus spatial/temporal constraints). This last classification is better known as *closed versus open skills*. Spaeth-Arnold (1981) also described the learner as an "active, problem-solving, decision-making, processor of information" (p. 32). Spaeth-Arnold (1981) postulates that skilled performance must involve perceptual, decision, and effector learning (p. 9). Perceptual learning demands recognizing and identifying aspects of the environment; decision learning requires selection of an appropriate response and analysis of its appropriateness. Finally, effector learn-

ing demands that movement be smooth, efficient, and coordinated. She also implores that learners must practice under game-like conditions and that isolated drills on fundamentals will not improve game play.

Ecological psychology seeks to impose order and regularity on perception and action (Gibson 1966, 1986). Ecological psychologists stipulate that perceiving, acting, and knowing are activities of an organism environment system and thus motor performance, for example, cannot be explained by analyzing the “mind” of the performer in a representational fashion. Turvey (Fitch and Turvey 1978) furthered their work by emphasizing direct perception via the detection of higher-order stimulus variables, as opposed to a reductionist, constructivist representational account of perception. He also challenged the laboratory experiments in movement science for their artificial approach to investigating human motor performance. The ecological approach focuses on the perception and control of events that occur naturally. William H. Warren (1995) is currently working on the visual control of locomotion and is attempting to determine how much of locomotion can be explained by using physical and environmental constraints before introducing mental principles. MacKay (1987) presented a comprehensive theory that assumed common or shared perception-action processes. A thorough discussion of his approach can be found in Denis Glencross (1993). Finally, Scott Kelso (1982), in the epilogue to his book, contrasts artifactual solutions used to explain motor behavior with the ecological perspective. His comments are true today as well. In movement science research we often use analogous devices to represent what goes on in the brain of the moving animal or human. This has serious implications for researchers and theorists trying to explain the “ghost in the machine” (Koestler 1967), and has relevance today.

Anne Rothstein

PERFORMATIVE KNOWLEDGE AND SKILLFUL PERFORMANCES

What are the concepts that surround performative knowledge? What are skillful performances? How do individuals learn or acquire a motor skill? What

does it mean when we say someone has mastered an area or activity—such as architecture, carpentry, basketball, teaching, or cooking? This entry focuses on performative knowledge and an understanding of skillful performances from a psycho-philosophical perspective and approach. Drawing information from the disciplines of philosophy, educational philosophy, and psychology, the concepts that surround performative knowledge, its critical components, and a theoretical description of skillful performance are all presented and explained. Also dealt with are the works of philosophers and educators who have employed the techniques of “analytic philosophy” to arrive at a clear understanding of the nature and scope of performative knowledge and skillful performances.

HISTORICAL PORTRAIT AND PERFORMATIVE KNOWLEDGE IN PERSPECTIVE

Twentieth-century philosophy experienced a revolution referred to as “philosophical” or “linguistic” analysis. The development of what is known as “analytic philosophy” incorporated rigorous techniques to examine central ideas, issues, and concepts. The intent of the analytic approach is to provide clarity and precision to any concept, idea, or issue. Also, it is to reveal the logical suppositions that lie beneath the structure of statements we make in the ordinary uses of language. The techniques of analytic philosophy were practiced in one form or another by such philosophers as George E. Moore, Bertrand Russell, Ludwig Wittgenstein, and Gilbert Ryle. In 1949, Gilbert Ryle, in a seminal work entitled *The Concept of Mind*, made the distinction between “knowing that” (having facts or possessing information) and “knowing how” (possessing skills and being able to perform certain acts or operations). For example, a person may know that John F. Kennedy was the president of the United States from 1961 to 1963—that is, the person is said to be in possession of a “fact” that is subject to a true or false condition. In contrast, a person who knows how to swim is said to be in possession of a “skill” that is not subject to a true or false condition but rather to having accomplished some task to a greater or lesser degree. To illustrate the distinction with another example, one person may know how to ride a bicycle while another may know the procedural operations that are involved in riding

a bicycle. The former is said to have performative knowledge while the latter has verbal knowledge. As explained by Jane Roland Martin in her work, "On the Reduction of 'Knowing That' to 'Knowing How,'" practice is one of the key elements that separate the two forms (1961).

As identified by Ryle, the constructs of "knowing that" (verbal knowledge) and "knowing how" (performative knowledge) represent distinct forms of knowledge (1949). Many educational philosophers and educators from the 1950s and through the 1970s used the distinction in their work; and many applied the techniques of philosophical analysis to uncover the nature, scope, and types of knowledge—knowing why, knowing when, and so on. Understanding the forms of knowledge and using philosophical analysis to arrive at a clearer understanding of performative knowledge has had pedagogical implications for educators and implications for researchers who study teaching and learning.

In the field of educational philosophy, particularly from the 1950s to the 1980s, philosophers and educators applied the techniques of philosophical analysis to the language and concepts of education. Precision and clarity of thinking about such central educational concepts as classroom practice, curriculum, subject matter, knowledge, teaching, and learning were envisioned as essential work for dealing intelligently and effectively with education and the educative process. Rigorous analysis leading to a clear and comprehensive understanding of any educational concept or phenomena was seen as important and most useful to achieving the desired goals of educators and researchers—be they to develop functional curriculums or to research and discern effective teaching. It was generally thought that having an in-depth understanding of the concept of interest would greatly enhance the quality of the resulting product. Thus, a thinking-through process that involved the application of such basic analytic techniques as (1) asking prior questions (for example, what is a functional curriculum or what do we mean when we say someone is an effective teacher); (2) identifying adequate criteria to be met by the concept; and (3) using ordinary examples and counterexamples to advance the concept to a level of practical testing and precision was valued and promoted by many educational philosophers and educators of the period.

Philosophical analysis applied to educational con-

cepts during the 1960s, 1970s, and the 1980s was championed by such prominent educational philosophers as Israel Scheffler, Jonas Soltis, Jane Roland Martin, B. O. Smith, Harry Broudy, Thomas Green, and Nel Noddings. All of these individuals, in their published works or portions of their writings, examined the distinct forms of knowledge that were presented by Ryle in 1949. In 1968, Jonas Soltis, in the first edition of *An Introduction to the Analysis of Educational Concepts*, applied the basic techniques of philosophical analysis to selected educational concepts including verbal and performative knowledge. In such chapters as "Types of Knowledge and Teaching," "Learning, Explaining and Understanding," and "The Disciplines and Subject Matter," Soltis provided readers with a greater understanding of the forms of knowledge and their relationship to teaching and learning. In 1978, in a second edition of the book, he further detailed the techniques of analytic philosophy and described three analytic strategies. Although Soltis focused more on "knowing that" and the teaching and learning of propositional knowledge, his coverage of "knowing how" was useful in furthering a basic understanding of performative knowledge. His work in an unpublished paper "Knowledge and Professional Practice in Education" (1974) and his collaborative work with Donna Kerr in "Locating Teacher Competency: An Action Description of Teaching," (Kerr and Soltis 1974) were both helpful in clarifying the concepts that surround knowledge and skillful performances.

Israel Scheffler of Harvard University was acknowledged as a pioneer in the field of educational philosophy and in the use of analytic techniques. In his book *Conditions of Knowledge* (1965), Scheffler provided a more sophisticated analysis of "skills," "performative knowledge," and the levels of performance referred to as "know how," "competency," and "proficiency." His work gained significant recognition among educational philosophers and subsequently influenced their writings.

As presented by Nel Noddings in *Philosophy of Education* (1995), many contemporary analytic philosophers by 1995 had taken an expanded view of the field of educational philosophy that went beyond the study of knowledge and subject matter to include analyses of a wider range of human concerns (e.g., emotions, literature, ethics, morals, justice, and equality). The emphasis by some philosophers was on

conceptual analysis and ordinary language analysis. Their work was aimed at discerning meaning, identifying conceptual errors, and setting limits on the appropriate use of the concept or term. A conceptual analysis of performative knowledge, and the usefulness, value, or utility of understanding performative knowledge is still of interest to such contemporary philosophers and educators, such as Pithamber Polsani, R. Barrett, Gareth Parry, and John Lyotard. Some believe that in many teaching and learning situations and in the study of many professions and occupations, knowledge is the content of learning, and the criterion for judging knowledge is the performance. The emphasis is placed on the action (performative) aspect of knowledge, its use-value rather than the academic truth-value sense of knowledge.

SKILLFUL PERFORMANCES

In an effort to organize and communicate the psycho-philosophical concepts and information that surround skillful performances and performative knowledge, a series of questions are identified in this segment, which is separated into concepts extrapolated from educational philosophy and concepts from psychology. The first series of questions are answered with information from the works of those philosophers who have applied the techniques of analytic philosophy to further our thinking about performative knowledge and skillful performances. The last question—How do individuals learn or acquire a motor skill?—is answered with information from psychology, more specifically from the work of an empirical researcher and specialist in motor learning, A. M. Gentile. The section following this one integrates the information from the above disciplines and fields to communicate the critical components and a theoretical description of skillful performances. The information has implications for teaching and learning, and is useful to those who facilitate the acquisition of skill and the development of skillful performers.

Concepts from Philosophy and Educational Philosophy

What are skillful performances? What do we mean when we say someone has performed skillfully? Originally, Ryle, in his 1949 book, *The Concept of Mind*, described skillful performances as “intelligent performances.” Skillful performances are critical thinking

performances. They involve the observance and application of rules or criteria associated with an activity. Ryle, equated intelligent performances with skillful performances. In portraying intelligent performances, Ryle emphasized the manner in which the performance is to be conducted. He proposed a procedure that requires individuals to think what they are doing, while they are doing it and to think in such a way that they will be able to detect and correct errors as well as repeat and improve upon their successes. They must also satisfy the rules of the activity and apply criteria while performing. “Intelligence” revolves around these notions and involves these operations.

Critical thinking is an important dimension of skillful performances. To think critically in a situation, performers must first be able to perceive the important elements of the situation and then regulate their performance accordingly. They must adjust their performance to whatever the total situation dictates and perform in such a way that they are in accord with the “rules” of the activity; and in such a way that the goal they have set out to accomplish is facilitated. The element of critical thinking involves judgments and the making of decisions in changing situations where the performer is adjusting and adapting to the changes, and the performer is learning and improving upon each move or action.

In his descriptive analysis of performances, Ryle points out that skillful performances cannot be reduced to mere habits or automatic operations. Skillful performances are capacities that cannot be made automatic. They are nonroutinizable. They involve the performer’s critical judgment.

Picking up on this point in 1965, Israel Scheffler in a chapter of his book entitled, “Knowledge and Skill” examined and corrected Ryle’s notion regarding the nonroutinizability of skillful performances. Through the use of examples, counterexamples, and an examination of the different types of tasks involving skill, Scheffler corrected Ryle’s mistaken assumption that all aspects of performances are nonroutinizable. Scheffler identified aspects of performances and kinds of skills that may be routinized. He labeled them non-critical skills. Other aspects, those which Ryle referred to in 1949, are labeled as critical skills. Thus, performances involve both types or aspects of skills. This notion may be illustrated with the example of the chess player. To move pieces around the board, the chess player need not, all of the time, be mindful of how

she is moving the pieces or if she is making the moves “properly”—in accord with the rules. These moves after a period of time or initial learning become automatic. That is, in the game of chess, there is a prior set of fixed rules that govern the moves; and either a move is permissible or not. Thus, through repetition, practice, and drill, an individual can perform these moves automatically or without the type of critical thinking called for in skillful performances.

However, it was pointed out that strategy in a game like chess or in any other rule-governed professional area or activity, such as architecture, teaching, basketball, and so on, presupposes an awareness of such a propriety. There is no prior set of fixed strategic principles or rules guiding decisions. Soltis illustrated this point nicely in a paper entitled “Knowledge and Professional Practice in Education” (1974). He made analogies and comparisons between the act of teaching and playing the game of basketball. His intent was to promote a reasonable middle ground between those individuals who see teaching as art and thus somewhat indescribable, and those who view teaching more as a science thus holding to a rather mechanistic view of an individual accumulating teaching behaviors and skills. Although, there are strategies and tactics more appropriately tied to situations, which may guide a performer’s decisions (i.e., the teacher or basketball player), each new decision necessitates an innovative strategy. That is to say, the performer chooses among alternatives, judging and evaluating consequences, learning from each move what was wrong or right and, ultimately, what to do next. Thus, one would say that the performer is thinking what she is doing while doing it. That such decisions and moves cannot be made automatic is obvious. Consequently, skillful performances may include both noncritical and critical skills. The word “intelligent” as Ryle used it refers to those aspects of performances involving critical thinking skills.

With the inclusion of noncritical skills, Scheffler expanded the concept of skillful performances from that proposed by Ryle in 1949. Regarding the noncritical skills, it was suggested that in many instances they are considered “facilities.” That is, as we look at the whole performance, the noncritical skills are often the underlying techniques or the basic competences that are nested within more complex competences. Once developed and made automatic they free the performer to focus on those features of

a situation that require the exercise of judgment.

Michael Polanyi in *Personal Knowledge* (1964) discussed the noncritical aspects of skills. He referred to them as the performer’s “subsidiary awareness.” Once learned, they need not be attended to with an intense awareness or observed on a conscious level. In fact, if they are, the continuity of the performance is interrupted and the performer becomes confused. This phenomenon is sometimes seen when a person who is highly skilled in an area is asked to think about or focus on the particulars of the performance, rather than on the whole situation and the goal to be achieved. Or it is seen when individuals become self-conscious about what they are saying and begin to focus on the next word rather than communicating the idea. In both cases the performance is disjointed and the performer confused. Performers who have acquired a high level of skill within an area or activity have learned to shift the focus of their attention to the whole situation, the effects of their acts, and the goal they strive to achieve. The noncritical skills are the tools that are used to achieve goals. A good example of this is the novice driver of a standard-shift car who, at first, is focused on attending to the motor operations involved in shifting gears and operating the gas pedal, clutch, and brake while steering the car. After practice, these motor operations become relatively automatic and the driver is then able to focus attention on the events occurring on the road. The motor operations have become the driver’s tools or noncritical skills.

With regard to the development of critical thinking skills, especially those involving strategic judgment, it is suggested that performers place themselves in a variety of situations and different contexts where they have opportunities to make decisions, make judgments about their decisions, evaluate the outcomes of their choices, and reflect upon alternative choices.

From the past work of educational philosophers and educators a picture of a skillful performer emerged as one who is perceiving the important features of a situation, making the necessary adjustments to the changes that are occurring, and acting in accord with the rules or criteria of the activity or area. The performer is executing moves, some aspects of which have been made relatively automatic and some of which require critical thinking or the exercise of judgment, all of which are being performed successfully; and all

of which are being directed toward the successful accomplishment of the goals of the activity. Individuals engaged in the development of skill go through this process to attain some level of achievement.

What are the various levels of achievement that are assigned to a performance? Educational philosophers and educators have identified four levels of performance: “know how,” “competence,” “proficiency” and “mastery.” The levels of know how and competence are contextually determined. That is, the point at which we would say that the skill has been achieved at these two levels will vary from context to context. With regard to proficiency and mastery they are the labels assigned to higher levels of achievement independent of context. They are levels that require something that goes beyond formal training. They require the performer’s desire and motivation to continually strive toward excellence in the skill or activity.

What are skillful performances like at higher levels? What do we mean when we say someone has mastered an activity or area? Harry S. Broudy in an essay entitled “Mastery” analyzed and described skillful performances at the mastery level (1961). According to Broudy, skills have two major components: executive and judgmental. The executive component refers to the muscular movements executed in order to achieve some sort of goal or adaptation. The judgmental component refers to the choices and decisions made that may guide the sequence of muscular movements executed in order to achieve a goal or adaptation. Skills and activities vary and usually require different proportions of these components. For example, the carpenter, chess player, teacher, and physician need more of the judgmental factor than the typist, garbage collector, and apple picker. And the carpenter in his work surely has more muscular movements to execute than does the chess player. Mastery in, or of, an activity is judged by the efficiency with which one performs each component and the consistency with which the performer achieves the goal or desired end. For the executive component, efficiency is a decrease in the amount of time and energy needed to perform the task, and a reduction in the number of errors made. For the judgmental component, efficiency is the reduction in time or an increase in the speed with

which one chooses among alternatives, selecting the one alternative that best achieves the adaptation and goal. Those who have attained higher levels of achievement within an area are able to quickly recognize, almost instantaneously, the important cues in a situation, and then choose and execute with efficiency an appropriate series of actions to achieve the goal or adaptation. Or they may create new and innovative actions to achieve the goal. Their perceptual, discriminatory and judgmental abilities enable them to adapt to new or unusual situations almost immediately.

Individuals who have mastered an activity such as tennis, cooking, sailing, painting, sculpturing, and so on, or have mastered an area such as music, ballet, architecture, teaching, and dentistry are in control of the skills. They are able to act on fewer cues and adapt more quickly without taking the time to consider alternatives. The mark of a performer at the mastery level is that of one who is capable of adapting to new and unusual situations successfully, without deliberating or at least without prolonged deliberation. In observing the performance, the performer’s thinking is an extension of skill.

As a result of Broudy’s work it was generally accepted that there were two important components of skillful performances—an executive component and a judgmental component that is dependent on perceptual ability. The level achieved in an activity is dependent on the degree of efficiency with which one is able to perform each component. Thus, mastery is viewed as the level assigned to individuals who are able to make quick and appropriate choices and decisions in new or unusual situations to achieve a goal or adaptation.

The quickness of decisions and the efficiency with which the decisions are carried out is the result of the performer classifying the information and knowledge acquired into larger categories: knowledge associated with the executive component (i.e., how something is done) and knowledge associated with the perceptual-judgmental component (when something is done). Thomas Green put forth the notion that along with the acquisition and classification of such knowledge, what is critical is that the performer possesses an understanding. The individual must know why certain things are done and why certain actions will produce certain outcomes or effects. Mastery and control of an area are heavily dependent on a person knowing

why. The judgments and decisions are aided by an understanding. Thus, we may say that a person's knowledge of how, when, and why are the critical features of becoming skillful in an area. The knowledge of such things acquired in a verbal sense and then practiced in an active sense is essential in becoming skillful and mastering an area or an activity.

Persons who have mastered an area or an activity, and I use the terms interchangeably here, have acquired a disposition to act in accord with the rules of the area. Their performances are actualizations of the knowledge associated with a rule-governed activity. Their verbal understanding of the knowledge and principles associated with the area enables them to transform habit into action. To master some area or activity is essentially to be in control of the rules, techniques, tactics, and strategies that make up the formal elements of that activity or area. The knowledge about *how* such things are performed, *when* they are performed or in what situations they are most effective, *why* such things are performed or why they have certain effects, and the knowledge about the actions permitted or not, all constitute the rules of the activity, which in turn governs the individual's performance.

Knowing how in its fullest sense and at its highest level of achievement requires action and "being able" to do something. The rules—the knowledge surrounding the formal elements of an area—define the activity and define the actions of the individual's performance. Thus, knowing how and being able to perform the specific techniques, tactics, and strategies; knowing when to perform the techniques, tactics, etc., and being able to make the appropriate judgments, choices, and decisions in various situations; and knowing why certain techniques, tactics, and strategies are used in particular situations are all important knowledge types and actions that are learned and performed. This generic description of a skillful performance was set forth in detail in *Verbal and Non-Verbal Moves of Teaching* (Catelli 1981).

Concepts from Psychology and Motor Learning

How do individuals learn or acquire a motor skill? A. M. Gentile, an empirical researcher and educator, developed a model depicting the learner's pro-

cess for acquiring a motor skill. Skill is task specific and goal directed in her schema. The model proposed by Gentile in 1972, and then further developed in publications of 1987 and 2000, identifies phases and a series of critical events involved in learning a motor skill. The focus is on the motor operations and the perceptual-judgmental component of skillful performances. The model incorporates the constructs of implicit and explicit learning. That is, it has been proposed that there are two interdependent learning processes to mediate skill acquisition: explicit learning and implicit learning. Explicit learning involves a conscious awareness on the part of the performer. The performer is consciously matching her movements to the environmental demands in order to achieve a goal—for example, to get the ball in the basket while being guarded by an opponent. The performer is guiding her successive actions, analyzing the situation, making choices, using past experiences, and predicting outcomes, all to achieve a goal with a level of consistency. The implicit learning process is not consciously accessible or available to the performer. It involves internal changes in the organization of the motor operations or movement that then, with practice, lead to an efficient and smooth movement pattern(s). For example, if we were to compare a novice ice skater with a skilled skater the quality of their movements would look markedly different. The skilled skater's movements are smooth and effortless while the novice skaters are jerky and lack control.

Briefly, and in its simplest form, in the initial phase of learning a motor skill, the phase in which the explicit process of learning is more influential, the performer:

- identifies the goal to be achieved or the problem to be solved;
- identifies and attends to the relevant factors in the environment;
- formulates a movement or a plan to accomplish the goal;
- executes a movement or movements as closely to the plan as possible;
- gets feedback about what was done;
- decides what the next response will be; and
- performs a second response or action and, if successful, goes on to the next phase of learning a motor skill.

An important point is that in open skills or tasks (i.e., tasks in which the physical environment is constantly changing as in a game of basketball or walking across a busy street), the performer must predict ahead of time what will occur in order to have movements and actions coincide with the event or to avoid the event (e.g., catch a thrown ball or avoid being hit by a car). To do this, the individual must be able to pick up information on fewer cues, make judgments, and decide which movement or motor plan is appropriate to execute or if one needs to be created.

Another important point is that feedback about the movement or action is important in learning a skill and becoming skillful. The performer must receive feedback information about the motor aspects of the performance as well as the outcome that was produced. Equally important is the information that performers receive regarding the appropriateness or inappropriateness of their judgments, choices, and decisions.

CRITICAL COMPONENTS OF SKILLFUL PERFORMANCES

For theoretical and pedagogical purposes, skillful performances then have three interdependent and critical components: a motor component, a perceptual-judgmental component, and a conceptual component. All three operate in a dynamic way to achieve a goal or solve some problem the performer has confronted. As presented by Linda A. Catelli in *Verbal and Non-Verbal Moves in Teaching* (1981), these three components (examined below) and a generic philosophical description of skillful performances can be and have been used by educators as pedagogical categories to organize knowledge and content for purposes of developing skillful performers. And they can be used by researchers as key components of a theoretical framework for investigating the development of skillful performers in an area.

Motor Component

The motor component refers to the motor operations an individual performs in such activities as playing a piano, playing a sport, dancing, painting, sculpturing, and drafting. The motor operations are the basic ingredients that make up the techniques of the activity. They involve the performer organizing and controlling movements and actions to meet the

demands of a stable or changing environment to achieve a goal. It involves explicit and implicit learning. For the motor component, efficiency is a decrease in the amount of time and energy needed for the performer to perform the technique, and it is a reduction in the number of errors made. Knowing how and being able to perform each technique is the important feature of this component.

Perceptual-Judgmental Component

The perceptual-judgmental component refers to the judgments, decisions, and choices that are made in order to adapt to a situation and produce some type of outcome or effect. This component includes judgments and decisions that are made about a situation that in turn determine which technique, tactic, or strategy will be used to accomplish the goal, or that stimulate a decision to create a new and innovative technique. In order to make the appropriate judgments and decisions the performer must first perceive the important features of the situation and then recognize that the situation requires the use or creation of a new movement, plan, technique, or tactic. The perceptual-judgmental component involves an ability to perceive the important environmental and situational factors, and an ability to analyze situations to make the appropriate judgments about which technique, tactic, or strategy will be used to achieve the goal (e.g., the quarterback deciding which play to run or the teacher deciding which teaching-learning strategy to use with a student). Both these abilities depend on prior knowledge of the use and effects of the different techniques or strategies in various situations, and prior knowledge of the important environmental and/or situational factors to attend to. Knowing when to perform each technique or strategy and being able to analyze and make the appropriate judgments in a variety of situations is the important feature of this component. At the mastery level, the performer is creating innovative techniques and strategies to meet new situations and to achieve the goal or solve a problem.

Conceptual Component

The conceptual component refers to the classification of the specific knowledge type and information

that make up a particular activity or area. In its fullest sense, it is the integration of the knowledge types that are then embedded in actions and skillful performances and seen as a person knowing how, when, and why, and being able to. For pedagogical purposes, knowledge in this instance is classified as providing the following information:

- facts and ideas about how techniques, tactics, and strategies are performed;
- facts and ideas about the use and application of techniques, tactics, and strategies in various contexts and situations;
- facts and ideas about why certain techniques, tactics, and strategies are used or applied in certain situations, as well as why they have certain effects; and
- facts and ideas of and about the rules and procedures that govern the activity or area.

THEORETICAL DESCRIPTION OF SKILLFUL PERFORMANCES

When the three critical components—motor, perceptual-judgmental, and conceptual—are combined in a dynamic sense they describe and define skillful performances. Skillful performances are actualizations of the different forms and types of knowledge acquired or learned. They are reflections of one’s ability to act in accord with the rules of the activity or area, and they are reflections of one’s ability to critically analyze situations and apply the knowledge acquired in innovative ways to meet the demands of new and unusual situations. At higher levels of achievement, skillful performances are “dispositions.” They are illustrations of one’s capacity to think what they are doing while doing it and to think in such a way that the goals of the activity are achieved under varied conditions and in numerous contexts and situations.

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LANGUAGE DEVELOPMENT

The field of linguistics, which is concerned with understanding and describing language, and the field of psycholinguistics, which undertakes the study of how language is comprehended and produced, have contributed to what we know about child language development. Psycholinguistics is a branch of cognitive psychology. Cognitive psychologists conduct research to understand how the human mind represents the real world. Psycholinguists have developed theories and research processes to untangle the mysteries of language development. A major concern of some psycholinguists is how children acquire language with the ease and relative speed that has been observed.

Scholars have attempted to clarify the relationships between thought and language for generations. Does language control the way we think and observe the world, or do our cognitive abilities regulate our development of language? Can humans think without language? Are language and thinking identical? Perhaps they are not. Artists sometimes think in colors and shapes, and musicians think about pitch, rhythm, timbre, and other musical elements without using language. Rudolf Arnheim, a psychologist of art and proponent of visual thinking, acknowledged that, although language might not be essential for thought, it can aid thought.

Linguists and anthropologists Edward Sapir and Benjamin Lee Whorf developed a widely influential theory in the early 1900s. The Sapir-Whorf hypothesis claimed that language determines the way humans think and that distinctions about the world vary according to one's native language. An example of the theory compares English and Hopi words. In Hopi, only one word is used for everything that flies with the exception of birds, but in English, there are separate words for insects, airplanes, balloons, and other flying objects. The theory suggested that individuals categorize and label things according to

what is available in their language. This theory has been criticized because it might not follow that a speaker of a language is unable to grasp a concept simply because a language lacks a word for that concept.

An opposing view of language and thought was offered by Swiss psychologist Jean Piaget, who argued that it is one's conceptual and cognitive development that enables language to develop—not the other way around. That is, humans must be able to think and form concepts for language to develop.

American linguist Noam Chomsky proposed a somewhat different theory. He regarded cognitive development as a necessary but insufficient condition for language development, and he believed that humans also must draw upon an innate language-acquisition device. It is this innate ability that makes language learning possible. An innate capacity for language learning has yet to be verified, but the presence of a language instinct makes intuitive sense to many scholars.

Like Sapir and Whorf, Russian psychologist Lev Vygotsky (1962) viewed concept development as a type of social constructivism wherein important concepts are learned through the medium of language. Such learning, however, develops from social interactions between language users. In time, researchers might definitively sort out the relationships between thought and language.

From the time of their birth until they enter first grade, children develop a degree of facility with the many complexities of language. For example, a six-month-old child may only babble, but a six-year-old is able to describe in detail the series of actions of a parent or friend, although the actions may have been unpredictable (e.g., *Dad stood on his hands. He tipped over.*). Learning continues throughout one's lifetime, and it is likely that language never is completely

learned. A six-year-old, however, has developed a considerable amount of control over a complex system of communication.

It has been theorized that children are born with a natural instinct for language but not for any particular language. Children learn whichever language is used by parents and caregivers as they adapt to the particular culture into which they are born. Thousands of languages are spoken across the globe. Some are spoken by only a handful of people, such as Busa-Boko, spoken in parts of Nigeria and Benin, while other languages, such as Russian and French, are spoken by millions. Children born to families of one language and culture develop language in much the same way as those of others. Language is not learned separately, as is walking or riding a bicycle. Language develops as part of nearly everything that a child experiences. Being dressed, being fed, and, later, getting dressed and eating are occasions for language learning. Language penetrates nearly every waking activity. Children do more than echo what they hear. In preparation for language, infants coo and babble in self-directed activity. Imitation is a part of language acquisition, but imitation often is experimental and creative. Children often say *mouses* for *mice*, for example, and *goed* or *goned* for *went*. These are not imitations of what they have heard. Such errors represent overextensions of syntactic rules that have been internalized—adding *s* for plurals and *ed* for past tense.

Language development does not follow any tight sequence. Children do not first learn every speech sound of a language, and then the words, and then the sentence patterns. Language is a highly complicated system of interrelated codes used to understand and convey meaning. For children with no hearing problems, language is initially oral. They develop oral language years before they begin to understand the functions of written language and learn to read and write. Children with hearing impairments develop language through signing, finger spelling, and lip reading.

In English, the oral code consists of forty-four distinct speech sounds that can be combined and recombined to represent all the words one learns and uses. Words may be thought of as labels for concepts, and in the preschool years, most words are learned orally. By learning to discriminate among speech sounds, children recognize that combinations of

sounds represent specific concepts. As they learn to understand and articulate words, children develop the earliest stages of language. From that point on, language development escalates as children learn to understand and utter sentences and experiment with intonation patterns.

Swiss semiotician Ferdinand de Saussure believed that understanding anything in the world around us is dependent on the interpretation of signs (Crystal 1997). Thunder and lightning on a cloudy day are a sign that a storm is near. Removing one's hat when a flag bearer marches past is a sign of respect. Words are signs for concepts. For children to learn a word, they must have a mental representation or concept, and they must learn that a certain word form represents that concept. Children learn to comprehend some words months before their first birthday, and they learn to produce words orally by the time of their first birthday or shortly thereafter. By age two, many are able to produce hundreds of different words and comprehend many more. British linguist David Crystal (1997) described research conducted in Germany that, using microphones and tape recorders, documented considerable growth in daily word production by young subjects. In language research, the word *type* refers to particular words, and the word *tokens* refers to all words in a language sample. For example, in the sentence *The judge entered and all the people stood*, there are eight tokens but only seven types because the word *the* occurs twice. The German researchers recorded an average daily output of about 20,000 word tokens produced by two-year-olds and 37,000 word tokens produced by children under age four as they engaged in normal activities.

Without words, language could not exist, but language also is dependent on an established system of combining words to convey meaning. The syntax or grammar of a language is a set of conventions used to signal specific patterns of meaning. Syntactic rules enable speakers to understand that *The boy chased the dog* has quite a different meaning from *The dog chased the boy*. Through the rules of syntax, statements can be transformed into questions. For example, *This is her new car* can become *Is this her new car?* Passive sentences can be formed from active sentences: *He was comforted by her words* means about the same as *Her words comforted him*. The syntax of a language specifies acceptable, con-

ventional sequences of words that “make sense” to native speakers of the language. When a non-native is speaking a foreign language, the spoken syntax sometimes becomes disordered, and it will sound incorrect to a native speaker.

As children develop language, they progress from one-word utterances such as *Mine* to two-word sentences such as *Mama gone*, *Tommy kick*, and *See puppy?* By age two, children can produce three- and four-word sentences such as *Tommy kick ball*. By age four, their syntactic complexity advances rapidly, and this skill continues to develop in the early school years.

Language development involves more than learning the patterns of sound and syntax and the development of vocabulary. Children begin to use language patterns and intonations appropriate to an increasing variety of social situations. Sometime between the ages of two and four, children acquire the skills to participate in conversation. They learn ways to initiate a conversation, hold a listener’s attention, and listen to another person, and they develop an understanding of taking turns. Children come to understand that certain words they have heard some adults use are taboo when spoken by children. They learn to use language to request, to persuade, and to comply. By the time they enter school, many young children have developed surprisingly adultlike conversational skills. Language development continues in the early and late school years as pupils acquire the ability to read and write and to comprehend and use language in more polished and mature ways.

Every child is a unique individual, and not all children develop language with the same degree of ease. Some reasons for delayed language acquisition are physiological or cognitive, and others are environmental. The amount and quality of language interaction between a child and parent or caregiver from birth onward are of major significance in language growth. Children who have others to spend time talking to them, listening to them, and reading to them regularly have an advantage in language development.

This chapter on language development has seven entries. In the first entry, the nature of language is described and exemplified. The origins and elements of language are addressed, and semiotics is introduced briefly. Language processes and children’s acquisition of the processes are the topics of the second entry, in which theories of language learning are compared.

Vocabulary development is the topic of entry three, where attention is given to the ways in which children learn words. Continuation of language growth in the early years in school is described in entry four. Its focus is the acquisition of reading and writing ability and the further development of oral language. Entry five addresses and exemplifies four purposes for language development in the intermediate and upper grades: using language for information and understanding, for literary response and expression, for critical analysis and evaluation, and for social interaction. Entry six discusses major factors that inhibit language development, including child-, home-, and school-based factors. The final entry of the chapter presents aspects of language that are often overlooked though widely used: onomastics, expressions, and abbreviations.

Dale Johnson and Bonnie Johnson

THE NATURE OF LANGUAGE

All humans use some form of language. Linguists, psychologists, and psycholinguists—scholars who study language—have examined each aspect of language and its development. A great deal now is known about this marvelous mechanism through which humans communicate. Language is defined as a formal system of sounds and symbols and the rules that govern them for the formation, expression, and comprehension of meanings, thoughts, and feelings.

There are about 6,000 distinct languages spoken on our planet, although most of them are spoken by only a few people. Some languages with few speakers include Kankanaey, spoken in the Philippines; Marka, spoken in Burkina Faso; and Simeulue, spoken in Indonesia. About one in ten languages has a writing system to represent its oral code. Over two hundred languages are spoken by more than one million people each: they include Pwo, spoken in Thailand; Yiddish, spoken in the United States, Israel, and Russia; Welsh, spoken in Wales; and Swahili, spoken in eastern Africa. The languages that are in most widespread use are Mandarin (Chinese), English, Hindi, and Spanish. Nearly half of the world’s population speaks one of these four languages as their native language. The expansion in use of the major

languages may bring about the elimination of many of the rarer languages within a century.

Languages differ, but every language has certain characteristics. Each language is systematic; that is, it is orderly, regular, uniform, and largely consistent. Without consistency and uniformity, speakers of a particular language would not be able to understand one another. Each language is arbitrary in the connection between its sounds, symbols, words, and the objects and ideas they represent. For example, the word *bad* in English means about the same thing as *schlecht* in German. In English, twenty-six letters are used to represent about forty-four speech sounds, but Russian uses thirty-two symbols, and Chinese has up to 4,000 basic characters and as many as 50,000 characters for literary use. English is read from left to right and top to bottom, but Hebrew and Arabic are read from right to left. Japanese is read from right to left. There are fourteen different patterns of directionality of script used in different languages.

Each language is flexible in that new words are added and old words change meaning or fall out of use. For example, the verb *google* (to seek information using an Internet search engine of that name) entered the language in recent years, and its longevity is not yet determined. Slang words such as *fliv* (a car) and *bazoo* (mouth) have fallen from use. *Bully* originally meant *a kind, upstanding person*; the meaning gradually changed to the opposite. Most major languages are variable in that the languages have words with more than one meaning and meanings represented by more than one word. Some languages have more than one dialect used in different locations, by different social groups, or by individuals with different ethnic backgrounds. The dialects may vary in pronunciation, word choice, and sentence structure but remain recognizable to other native speakers of the language. Every language is initially oral in terms of human development and language acquisition.

Children begin to express themselves orally and comprehend oral language years before they learn to use the written system of the language. Many languages are only oral and do not have a writing system, but no language has only a writing system without an oral language. For some written languages, including Old Akkadian and Latin, the spoken language has become extinct. Spoken language,

in one form or another, has been in use for 50,000 years or more, but alphabetic (not pictorial) writing systems are much more recent inventions, dating back to about 3500 B.C.E. Pictographic symbols, such as ideographs (shapes that represent concepts), cuneiforms (wedge-shaped symbols that represent sounds and meanings), hieroglyphics (pictures that denote objects, concepts, and sounds), and logograms such as Chinese and Japanese characters that represent whole words or phrases, were precursors to alphabetic writing.

ORIGIN OF LANGUAGE

A subject of interest to scholars for centuries has been the origin of human language. Danish linguist Otto Jespersen identified and grouped a number of theories that had been postulated and later discredited. These included the *bow-wow* theory, wherein early people were thought to imitate the sounds of animals as the initial stage of speech. The *pooh-pooh* theory posited that speech arose from instinctive sounds attributed to human emotions. The *ding-dong* theory asserted that early people responded to the sounds of the world around them by producing oral sounds. The *yo-he-ho* theory stipulated that language arose from rhythmical communal grunts caused by the physical efforts of the ancients working together. Finally, the *la-la* theory suggested that the factors that initiated language were the romantic sounds associated with love, play, and song (Crystal 1997).

More recently, scientific evidence from the fields of archaeology, genetics, and human behavioral ecology has shed light on the origin of language. Research on the brain sizes of Neanderthals and Cro-Magnons, with an analysis of the shape of the jaws and oral cavities preserved as fossils, has provided information. There is general support for considering the period 100,000–20,000 B.C.E. as the time during which speech developed. Some researchers have suggested that the first human language began about 50,000 years ago in Africa among the Hadza of eastern Africa and the Khosian of southern Africa. The language used click sounds to serve the role of consonants. Between 50,000 and 10,000 years ago, humans dispersed from the African homeland, and one language became many

because of distance and ethnic differentiation. Oral language seems to have emerged many thousands of years before the first evidence of any type of written language.

Scholars who study the history of language have identified a range of nineteen to thirty-two different language families. Included among them are Afro-Asiatic, Eskimo-Aleut, Indo-European, and Sino-Tibetan. Each language family shares some commonalities in terms of speech sounds, vocabulary, and sentence structures. Attempting to classify languages is complex and usually is done in one of two ways. Genetic classification assumes that languages in a family developed from a common ancestor language. Typological classification is based on the similarities and differences among languages. For example, some languages include different tones to signify meaning and use sounds not found in other languages. English descended from the Indo-European family of languages. There are fifty-five different varieties in the Indo-European family, including Celtic, Germanic, and Italic. Whether or not all major language families stem from one or several original languages is still unclear. The origin of language remains of intense interest to researchers from a number of disciplines.

COMPONENTS OF LANGUAGE

Human language exists to convey, expand, and comprehend meaning, that is, to communicate. Languages have a number of components or systems, including the phonological (sounds), orthographical (written symbols), morphological (words and word parts), syntactic (sentences), and semantic (meanings) systems. These systems help us access the prior knowledge, experiences, and beliefs stored in our minds and help us expand and modify such knowledge.

The sound system is called the phonology. Phonemes are the smallest distinctive speech sounds used in a language. For example, the phonemes /b/ and /d/ are used to distinguish such words as *bill* and *dill*, *bark* and *dark*. Approximately forty-four phonemes are used in English, depending on a person's dialect (e.g., *Don* and *Dawn* are pronounced the same way in some dialects but not in others). Everything that we say or hear in language uses these forty-four distinct sounds combined in different ways to represent

different words. When we listen to each other in conversation, we hear a steady stream of spoken sound, and we seem oblivious to the individual phonemes of the language.

In addition to phonemes, the sound system of a language involves melodic and rhythmic patterns of speech. These patterns, called prosodic features of language, include variations of stress, juncture, and intonation. Stress is the relative loudness given to syllables or words. In *sofa*, the first syllable is stressed. In the word *conversation*, the third syllable is stressed. Juncture refers to the location of a pause within a word or sentence (e.g., we buy flowers at a *greenhouse*, and we might live in a *green house*). Intonation is the rise and fall of the voice. Intonation is used to signal questions, in contrast to statements: *Is that a monkey? That is a monkey*. It also can convey feelings or attitudes such as boredom, excitement, sarcasm, and frustration.

Related to the phonological system is the written system of a language, called the orthography. In English, the twenty-six letters of the alphabet are used with punctuation marks, certain typographical features or logograms (e.g., \$, &, %), and spacing to represent oral language. English lacks uniformity in letter-sound correspondence. Some letters represent many sounds (e.g., the letter *a* in *at*, *able*, *call*, *father*, and *away*). Some phonemes can be represented by more than one combination of letters. For example, the long *a* sound heard in the word *able* can be represented in words such as *play*, *pain*, *stake*, *steak*, *neighbor*, and *they*. Due to these variations, there are hundreds of letter/sound correspondences in English words. Variations can be seen by contrasting the pronunciations of pairs of words such as: *break-speak*, *paid-said*, *five-give*, *low-how*, *though-enough*.

Other language elements are the morphology, syntax, and semantics of the language. Morphology involves the structure of words and how they are formed. The smallest distinctive units of meanings in a language are called morphemes, of which there are two types. Free morphemes are units of meaning that need not be attached to other morphemes. Words are considered free morphemes. The word *happy* carries one unit of a meaning. Bound morphemes also carry meaning, but they cannot stand alone. The morpheme *un-* can mean *not*, but it must be attached to a free morpheme (a word). When *un-* is attached

to *happy*, a new word, *unhappy*, is created. *Unhappy*, therefore, consists of the free morpheme *happy* and the bound morpheme *un-*. Thousands of English words are created through the use of morphological rules that give us compound words (e.g., *roadblock*), words with prefixes (e.g., *rewrite*), words with suffixes (e.g., *stubbornness*), conversions in which a noun (e.g., *paper*) becomes a verb (e.g., *to paper*) and other modifications discussed in the final entry of this chapter.

The syntactic system comprises of the rules of language that determine permissible word order and function. The sentence *The dog ran down the hill* makes sense, but *Hill dog down the ran the* makes no sense because it does not follow syntactic rules. These rules also allow us to know that *The baby smiles a lot* means about the same thing as *She is a smiley baby*. It is the syntax that enables us to generate sentences that we never have spoken before but will be understood by the listener. Syntactic rules enable us to understand what others say. Although all languages differ, they do share some commonalities in syntactic structure. For example, all languages have two types of modifiers corresponding to adjectives and adverbs. All languages enable the conversion of sentences (e.g., *That is a school*) into questions (e.g., *Is that a school?*), negatives (e.g., *That is not a school*), and commands (e.g., *Show me the school*). There are a number of other syntactic similarities across languages, and there are some differences. In English, for example, the past, present, or future tense is indicated by the verb (e.g., *He walks. He walked. He will walk.*). In Japanese, adjectives can indicate the tense (e.g., *shiroi* means *white*, but *shirokatta* means *was white*). In English sentences, place occurs before time as in the example, *I am coming home at two o'clock*. In German sentences, time is referred to before place. For example, *Ich komme um zwei Uhr nach Hause* would be translated literally as *I am coming at two o'clock home*.

Semantics refers to the meaning system of the language. It consists of the vocabulary of a language, also called its lexicon. Morphemes contribute to this meaning system. Semantics refers to the nuances and variations of meanings of words as they are used in particular situations. English has many words that carry multiple meanings. For example, the word *down* has different meanings in the following sen-

tences: *My computer is down, The sun is down, We went down South, I tied it down, I wrote it down, Today I feel down*. Similarly, our language has many synonyms, or words that mean about—but not exactly—the same thing. Synonyms for the word *excellent* include *superior, first-rate, top-notch, superlative, outstanding, magnificent, sensational, unsurpassed, superb, stellar*, and more. Semantics also refers to other meaningful elements such as idioms (e.g., *in a pickle*), proverbs (e.g., *Waste not, want not*), and slang (e.g., *a greasy spoon*).

An important aspect of the semantic system of language is the concept of pragmatics, concerns the different meanings of a sentence in a particular situation. These differences may be in terms of the intent of the communication (e.g., persuading, demanding), the conversational interaction (e.g., opening or closing a conversation, taking turns, changing the topic), and speech style (e.g., the tone and vocabulary used in addressing a small child or an adult). For example, *Here comes the bus* takes on one meaning if a person is simply waiting for a bus but a different meaning when used as a warning to someone standing in the street, and a third meaning when uttered by a vendor upon seeing a tourist bus arrive. In the two sentences *I saw her come into the theater* and *I saw her go into the theater*, we are able to discern whether the speaker was inside or outside the theater. Pragmatic factors influence our selection of words, syntactic structures, and prosodic features.

Humans also engage in nonverbal communication, that is, communication external to or in addition to language. There are three categories of such communication. Paralanguage refers to aspects of vocal behavior. Speakers use tone of voice, volume, stress, tempo, and hesitation to convey different feelings or meanings, such as suspicion, surprise, anger, doubt, or enthusiasm. In the sentence *Mary Anna spent the dollar*, different words are emphasized in response to the questions *What did Mary Anna spend? Who spent the dollar? What did Mary Anna do with the dollar?* A second type of nonverbal communication is kinesics or body language. This involves the use of posture, facial expressions, gestures, eye contact, nodding, toe tapping, and other physical movements to convey feelings of disappointment, joy, impatience, and more. Third, nonlinguistic utterances also are used to express feelings. The sound *nnnnhbbb* by a

class when the teacher announces a pop quiz is an example of a nonlinguistic utterance.

These language systems—the phonology, orthography, morphology, syntax, and semantics—enable us to communicate and be understood. In addition, there is a visual language used primarily by people with hearing impairments. Various systems of sign language have been devised to represent the spoken elements of language. Sign languages are as complex as spoken and written language, and they perform the same functions. Sign languages were created in different parts of the world, and they are not mutually intelligible. Although the spoken and written English of North America and Great Britain are quite similar, their sign languages are not. American sign language employs about 4,000 different signs that can convey a vast range of meanings. The term *cherology* refers to the different signs and is analogous to the phonology of spoken language. A somewhat different type of sign language is dactylology, or finger spelling, in which each letter of the alphabet has its own sign. Finger spelling has scope and flexibility, but it is a very slow system of language. It often serves as a bridge between spoken and sign language.

There are other gestural systems of communication. These simple gestural systems are used in a wide range of situations and by a variety of professions. A finger to the lips indicates a desire for silence, and a motioning gesture toward the body can mean *Come here*. Theater, film, and television directors use hand signals to indicate available remaining time and degrees of loudness desired. Sports officials use hand signals to indicate infractions and time-outs. Auctioneers use gestures to regulate bidding. Bicyclists sometimes use hand signals to indicate intentions. These are not true sign language in the sense of those used by the hearing impaired. They lack structural complexity and communicative range, but they are a form of communication. New Zealand psychologist Michael Corvallis suggested that gestures preceded oral language and came into use when early humans started to walk on two legs, freeing the hands for signals. To this day, gesturing continues to be an expressive part of human communication (Wade 2003).

SEMIOTICS

Semiotics is the study of the properties of signs and

signaling systems found in all forms of human communication. Plato and Aristotle speculated about the differences between natural signs (e.g., the sounds of birds) and conventional signs, such as those used in human speech. Flushed skin could be seen as a natural sign that someone has a fever or has been in the sun too long. Ferdinand de Saussure, considered the father of semiotics, defined linguistic signs as two-sided entities: the signifier (the oral or written word) and the signified (the mental concept identified by the signifier). Stated simply, signifiers and the signified refer respectively to words and their meanings (Crystal 1997). American philosopher Charles Sanders Peirce conceptualized signs as having three elements. He used the terms *Representamen*, *Object*, and *Interpretant* to indicate the word, the thing, and the concept respectively (Crystal 1997). Consider a schoolhouse on a street. The schoolhouse is Peirce's Object. The mental concept of a schoolhouse is his Interpretant. The spoken or written word *schoolhouse* is Peirce's Representamen. In contrast, Saussure would have referred simply to the signifier (i.e., the word *schoolhouse*) and the signified (i.e., the mental concept of a schoolhouse).

This is a major simplification of a complex body of theory on the nature and elements of signs. Semiotics concerns the sign systems in all modes of human communication (i.e., sight, sound, taste, touch, and smell) and in all contexts (e.g., politics, film, clothing, dance). Volumes of scholarship have been devoted to the study of semiotics. For the purpose of this chapter, communication signs consist of the phonological, orthographical, morphological, syntactic, semantic, and paralinguistic elements described previously.

Dale Johnson and Bonnie Johnson

CHILDREN'S ACQUISITION OF LANGUAGE PROCESSES

LANGUAGE PROCESSES

The four principal language processes are listening, speaking, reading, and writing. The first two, listening and speaking, are processes of *oracy*. Read-

ing and writing comprise the processes of *literacy*. The processes of listening and reading are the comprehension processes through which we attain meaning by decoding the oral or written messages to which we are exposed. Speaking and writing are the productive processes of language through which we encode the meanings, experiences, or feelings that we want to express to others. We use listening and reading to learn, and we use speaking and writing to express something.

None of this is as simple as it seems. Using language is a human endeavor that we often take for granted and to which we usually give no more thought than breathing. Consider the information that we have stored in our minds for each of the tens of thousands of different words that we know as adults: the meaning of the word, its pronunciation, its spelling, how to move the lips and vocal cords to form the word, and how and when to use the word. British linguist Jean Aitchison used the term *mental lexicon* to describe each human's storehouse of words (1994). A lexicon can be considered a collection of words such as those found in a dictionary. Most good dictionaries contain definitions, spellings, pronunciations, grammatical functions, some illustrations, word histories, and sample usage. Our mental lexicons hold most of this information for each word, but they also hold our negative or positive personal experiences with the word, that is, associated words (e.g., salt, pepper), aversions (e.g., snake, spider), biases (e.g., conservative, liberal), and other special word and world knowledge.

Words in our mental lexicons are organized not alphabetically but, rather, by sound and meaning. Consider the speed with which we access words when we engage in speaking or writing and the speed with which we usually comprehend the speech or writing of others. Every human has at least two vocabularies in the mental lexicon: the phonological words used in listening and speaking and, if we are not illiterate, the orthographic words used when we read and write. We comprehend input through phonological (listening) and orthographic (reading) information, and we produce output phonologically (speaking) and orthographically (writing). If we are fluent in second or third languages, the number of vocabularies is multiplied. How did we learn all of this? How did we develop the automaticity in language production and comprehension that we exhibit so effortlessly?

ACQUISITION OF LANGUAGE

Children do not wake up on the morning of their first birthday and begin speaking. The groundwork for language skills starts to be laid practically from birth. Think of the monumental tasks that confront children from the time of their birth until they enter school. They need to recognize and later produce all the sounds of their first language. Young children must learn hundreds of ways of combining these sounds to form the words that they utter and to comprehend the words that they hear.

Most children learn several thousand words by the time they are six years old. They hear and utter hundreds of grammatical constructions, and they internalize the rules that permit these constructions, although they are not aware of those rules. Numerous ways to use the prosodic features of pitch, juncture, and stress to convey different meanings, feelings, and intentions will be learned. Youngsters will understand that certain words and expressions are unacceptable to some people. In other words, they will begin to learn the many nuances of language use. Upon entering school, most children will face the added demands of learning to read and write the language. This involves learning the skills and strategies of letter recognition and formation, letter/sound relationships, spellings, reading comprehension, writing techniques, figurative expressions, and more.

Researchers use a variety of processes to study how children acquire language and in what sequence language develops. Most of what we have learned has come through tracking individual children. Youngsters have been observed and recorded in naturalistic settings at home and at play. Researchers use the diaries kept by parents that document the words and sentences spoken by their child to understand language development. Systematic investigation of language acquisition was made possible in the mid-1900s when the tape recorder came into routine use. Later, video recorders, microphones, and special observational facilities enabled researchers to accumulate reliable data on the stages of language development. Naturalistic settings such as home or a room equipped with toys, and with other children or adults present, are best for sampling children's spontaneous language. Much of this research is conducted with individual children.

In contrast, cross-sectional studies look at particu-

lar variables in groups of children. Youngsters at age four, for example, may be asked in groups to engage in a conversation with a toy stuffed animal. The types of constructions the children use are tallied and analyzed. Psychologist Roger Brown and British psycholinguist Gordon Wells have conducted this type of research using sampling intervals to gather information on several children over time (Crystal 1997). Researchers have observed that individual differences form a range of language acquisition. Factors such as societal background, intelligence, and personality characteristics contribute to these differences. Most children follow the same general path as they acquire speech, but they do so with large variations in rate of acquisition.

Some researchers have argued that humans have a critical period or “window of opportunity” for first language learning, which begins to close between ages six and twelve. There have been accounts of children raised with no linguistic interaction with other humans for several years after their birth. Children who have been isolated from language input during those critical years have rarely developed language facility beyond that of a preschool child. Psycholinguist Eric Lenneberg studied brain maturation and argued that the critical window for language learning ended at puberty, when the brain was fully developed (Bolinger 1968). This view has been disputed. Some researchers believe that the language-learning window begins to close much earlier for children who are deprived of language interactions.

During their first year, most children learn to recognize auditory differences in the speech they hear, and they begin to produce sounds that are used in their native language. Hearing the native language influences speech perception in very young children. They are born with the ability to perceive all of the differences in sounds used in any and all languages. As they continue to hear and imitate the dominant or native language around them, they experiment and begin to focus only on the speech sounds pertinent to that language; they eliminate phonemic features unimportant to it. By age two, children articulate several vowel sounds and such consonant sounds as /b/, /d/, /t/, /m/, /n/, and /p/. Most of the rest of the consonant and vowel phonemes are in use by age four. The last consonant phonemes to be learned are those heard in the words *thin*, *this*, *judge*,

and *measure*. Some children do not learn these latter phonemes until the early school grades.

After children begin to discriminate the differences among sounds, they start to use those sound differences to distinguish particular words. By about the age of two months, children begin to coo; that is, to make vowel-like sounds. By the time babies are five to six months old, they can produce sequences of vowel- and consonant-like sounds that mark the difference between cooing and babbling. Initial babbling typically makes the sounds of repeated syllables such as *buh buh buh*, *da da da*, and others. When babies are nine or ten months old, they begin to use consistent sounds in different situations or in accompaniment to specific behaviors. They use certain sounds such as /u/ (heard in *food*) to show pleasure and others such as /ae/ (heard in *hat*) or /o/ (heard in *owl*) when cranky. Between the ages of nine and eighteen months, infants’ babbles become more complex and show differences in stress and intonation to the point of sounding more like speech.

Most children produce their first recognizable words by the end of their first year. With their first steps in learning single words, they are embarking on a word-learning journey that will continue throughout life. This is not surprising because most languages have hundreds, thousands, or even millions of words. No one could ever learn them all. Children engage in three separate but related word-learning tasks. The first is naming. Youngsters begin to recognize that certain combinations of speech sounds they hear and later produce serve as the names of people or things. More than 60 percent of their initial words serve a naming function, and about 20 percent express an action. The sounds heard as *muh-muh* become understood as the name *mama*. This is called the *holophrastic* stage of language development. A child may use the word *shoe* to mean *I want my shoe* or *Where is my shoe?* The second task in word learning involves grouping words that fall together in a category. The initial word *kitty* may label the family pet, and later the child may use the word *kitty* to refer to other cats, pictures of cats, and toy cats. The third vocabulary-learning task requires that children figure out how different words relate to or are different from words within and across categories. They come to understand that kitties have fur, a tail, and purr, but birdies have feathers, a beak, and chirp.

Each of these tasks, naming, categorizing, and re-

lating, are significant, individual language discoveries. Learning new words involves first comprehension and later production. Children with no neurological problems, and who are raised by caring adults who communicate with them, acquire new words and the other systems of language quite effortlessly. Young children require human interaction to attach meanings to words. Their vocabularies, with adult input, can grow remarkably quickly. Psycholinguist Eve Clark reported research studies indicating that children from age two on acquire about ten new words a day on average or about 3,500 words a year for an average total of about 14,000 words in their mental lexicons by age six (1993).

Before they are three years old, most children combine words to produce sentences. Linguists call these short, simple word combinations telegraphic sentences. They are the first indication that children are beginning to learn something about syntax. The telegraphic stage looks more like real grammar. A sentence such as *Doggie bark* seems to indicate an awareness of a subject and verb sentence, and a sentence such as *Want milk* indicates a verb plus object construction. Later, these simple patterns are expanded into three-word sentences (e.g., *Mama read book*) and four-word constructions (e.g., *Me go bed now*). By age three, sentences become longer as children string clauses together to tell little stories and express more complex thoughts. Sophistication increases so that the sentence *He give milks to kitty* by a three-year-old becomes *He gave milk to the kitty* by age four. A child's syntax continues to develop through the early school years and into the teens.

As children learn to construct two-, three-, and four-word sentences, they also develop the ability to use language for different purposes or with different intentions. British psycholinguist M. A. K. Halliday described seven functions of language used by infants and young children: instrumental, regulatory, interactional, personal, heuristic, imaginative, and informative. The instrumental function is used to satisfy basic needs, such as when a baby holds up a cup and says, "More." The regulatory function is used to influence the behavior of someone. The toddler who says "Tie shoe" is using language to influence behavior. The interactional function is used to establish contact with someone (e.g., "Daddy"). The personal function is used to express feelings or attitudes. The child who finishes her pudding and says "Yum

yum" is showing her feelings about the dessert. Exploration or questioning is the heuristic function of language. The child who points at a vase and say "What at?" is using heuristic language. Imaginative language is used when the child is at play. A young boy who seems to be talking with his toy figure is using language for imaginative purposes. When a child wants to communicate information (e.g., *Me cold*), the child is using language to inform.

Children show tremendous growth in syntactic production and comprehension during the preschool years. From ages two to four, their sentences grow longer and their communication intentions expand. Three- and four-year-olds are able to make requests (*Let's go home*), give responses (*O.K. I go bed now*), provide descriptions (*Doggy got big teeth*), make statements (*Billy being good today*), regulate conversation (*I done now*), and use language to tease or joke (*There bug on you*). By age five, children have learned to express themselves using the same syntactic type for different purposes. For example, they can use questions to obtain information (*Where are you going?*) or to initiate a conversation (*Can you tell me?*) or as a request (*Can I have some?*). Between ages two and five, children learn that there are several skills involved in carrying on conversations. They learn when to speak and when to listen. They learn to make comments appropriate to the topic, how to take turns, and how to terminate a conversation or change topics.

Learning to speak and listen with all of the above nuances is a process that develops spontaneously and naturally through interactions between parent or caregiver and child. If there are no physical problems, no language specialist is needed for the child to achieve success. Learning literacy, however, almost always requires instruction and support from teachers and others, such as older siblings and relatives. Nonetheless, some developmental accomplishments pave the way for preschoolers to achieve later literacy acquisition.

The following emergent literacy accomplishments are typical of preschool children who later learn to read and write with ease. Some time before age three, these children recognize specific books by their covers. They learn how to handle a book and turn pages, and they pretend to read books. They enjoy listening to stories and looking at accompanying pictures and are able to name objects and talk

about characters in books. Children may begin to notice letters in words, and they may produce letter-like forms in scribbles. Not all children accomplish these tasks, but those who do are often successful when learning to read.

Accomplishments by three- and four-year-olds that lead to later success in reading include knowing that it is the print, not the pictures, that is read in stories, learning to recognize local environmental print (e.g., popular fast-food restaurant names), understanding that spaces delineate words, and realizing that alphabet letters have names. These children enjoy hearing repeated sounds in language and rhyming elements (e.g., *cat/hat*). They show an interest in books and reading, become aware of sequences of events in stories, and begin to connect stories to life experiences. Children try out new vocabulary in syntactic constructions in their own speech, and they can understand and follow oral directions.

Children are born with biological traits passed along in the genes of their forbears; among these traits is the capacity to acquire natural language. Psycholinguists, psychologists, and linguists study the developmental processes children use over their first five or six years to become competent speakers of one of the world's 6,000 languages. These processes are complex and require the use of children's perceptual, cognitive, communicative, and learning skills as they interact with parents, caregivers, and other mature language users. How this enormous amount of learning is possible has been a subject of continuing interest, and a number of language-learning theories have been proposed. These are discussed next.

THEORIES OF LANGUAGE DEVELOPMENT

Philosopher John Locke, in the seventeenth century, postulated that at birth, a child's mind is a blank slate and knowledge accumulates through experience. Locke's position has contributed to the long-standing debate over the role of nature (innate processes) versus nurture (the environment) in how children learn anything, including their natural language. This debate continues between adherents of various learning theories.

The acquisition of language has been viewed as a process of imitation and reinforcement. Psychologist B. F. Skinner proposed a behaviorist theory of learn-

ing based on a process called operant conditioning. The theory stipulated that changes occur in behavior based on events or actions that follow the behavior. Positive reinforcement increases the possibility that a behavior will recur, and punishment decreases the probability of recurrence. In terms of language development, the child who looks at her father and says "Dada" may be rewarded with positive comments and perhaps a hug. The same child, however, who looks at her father and says "Mama" might be corrected or possibly reprimanded, "No, no, no, I'm Dada." In behaviorist theory, imitation is thought to play an important role in children's language acquisition. Thus, the views of behaviorists tend to fall on the nurture end of the nature versus nurture scale. This theory has been criticized because it does not explain some facts about language development, such as children's ability to utter or comprehend unique sentences that they have never heard before.

Noam Chomsky's nativist theory of learning argued that the ability to learn language is an innate behavior in humans, and, barring any neurological or physiological deficiencies, children are automatically born ready to learn language (Pinker 1994). Children are presumed to have an internal language acquisition device (LAD) that enables them to process language and produce sentences that will correspond to adult language. This theory rests on the argument that because language is unique to the human species, it must be genetically or biologically determined. The theory further argues that because of the inordinate complexity of language, it would not be possible for five-year-old children to develop the language facility they do unless they brought innate knowledge to the process. In other words, children are "wired" to learn language, and they develop facility in the particular language to which they are exposed. Nativist theory recognizes that environment is important in language acquisition but primarily to activate the innate language mechanism. Compared to behaviorism, the nativist theory is on the opposite end of the nature versus nurture scale, weighing in on the side of nature. It has proved difficult to detail the properties of the LAD, and this has led to additional theories of language development.

A third theory, the cognitive theory, seems to fall between behaviorism and nativism. Cognitive theorists, such as Jerome Bruner (1960), recognize the role of innate knowledge in language acquisition,

but they believe that innate knowledge is more generally cognitive rather than just linguistic. Cognitive theorists believe that language development is but one ability dependent on cognitive development. Cognitive proponents view environment as a critical element in children's language acquisition, but they do not see children as passive recipients, that is, blank slates. Instead, they believe that there is an essential interaction between children's innate cognitive structures and their linguistic and non-linguistic environments. It has been difficult to distinguish precisely the interrelationships between cognitive and linguistic development as children become more advanced.

There are additional theories of language development that are modifications of one or more of the three theories described. For example, Lev Vygotsky proposed one slightly different version of cognitive theory (1962). It postulates that although children have innate cognitive bases for language acquisition, the actual learning begins with functions that children want to express. Thus, they develop language to express the functions (e.g., *Where mama?* or *More milk!*). The purpose drives what they learn. British evolutionary psychologist Robin Dunbar asserted that language originally developed because of the social needs that bind individuals into communities (Wade 2003). Similarly, the social/communicative theorists believe that children's early social and communicative interactions are of major importance in language acquisition. Youngsters' acquisition of linguistic forms and rules grows out of their interactions with parents or caregivers. Under this theory, the caregiver and the child play highly active roles in the development of language.

Finally, the connectionist theory of language development proposed by David Rumelhart suggested that language knowledge consists of connections and networks of connections, rather than rules (Tomasello and Bates 2001). His theory developed from research in artificial intelligence. The theory contends that children acquire language without ever figuring out the rules or even that there are rules. Connectionist theory is in its developmental stage and has yet to gain widespread acceptance.

Theories are not facts, and although a great deal of research has been conducted, it still is not known exactly how children are able to succeed in the remarkable feat of language acquisition. Some at-

tempts to relate cognitive and linguistic development using the Piagetian stages, described in an earlier chapter, have not been successful. Major advances have occurred in understanding both linguistic and cognitive development, but as of this writing, these advances have not been shown to have a close relationship. Numerous scholars continue to engage in research in cognitive development and the interplay between cognitive development and language learning. In the meantime, children continue to develop language practically from birth, and that development expands well into the school years. It is not possible with the present state of knowledge to choose definitively from the different theories. It seems logical that a combination of imitative skills, an innate language acquisition device, cognitive development, and social communication interactions contribute to language development. How these factors interact will continue to be of interest to child language researchers. The next entry describes the one aspect of language development that begins at about age one and continues throughout the remainder of our lives: vocabulary development.

Dale Johnson and Bonnie Johnson

VOCABULARY DEVELOPMENT

Few things in life seem more ordinary than words. We take words for granted and rarely think about the words we use in our speech and writing or the words we hear in everyday conversation. How do we choose the words we use so automatically? How do we understand the meanings of the words we hear? How did we learn all of the words that we use so readily?

Words have been defined as "labels for concepts," "combinations of sounds that are meaningful," and "units of meaning." One major dictionary requires four dense columns of type to define *word*. Words can be thought of in three major categories: lexical words, grammatical words, and onomastic words. Lexical words have meanings that can be described. They usually are common nouns (e.g., campus, door, lasagna), verbs (e.g., dash, consider, stretch), or modifiers (e.g., recently, huge, always). Some words

can be classified in different lexical ways. For example, the word *round* can serve as an adjective (a *round* ball), a verb (*round* the bend), or a noun (to sing a *round*). Grammatical words are the structure or function words that link lexical words in sentences. Conjunctions (e.g., but, although, therefore), determiners (e.g., few, that, every), pronouns (e.g., they, she, it), auxiliary verbs (e.g., is, are, have), prepositions (e.g., from, of, over), and interjections (e.g., oh! hooray! wow!) are examples of grammatical words. Onomastic words are the names of particular persons (e.g., Steve), places (e.g., Penn Station), and things (e.g., Long Island Railroad). Each word has a phonological form used in speech and an orthographic form used in writing. Some words are derived using morphological rules (e.g., teach, teaches, teacher, teaching, teachable, reteach), but others are pure units of meaning to which morphemes may be attached (e.g., prairie, odd, watch). British linguist David Crystal used the term *lexical item* or *lexeme* in place of *word* because lexemes could accommodate units of meaning longer than a word (1995, 1997). In English, some units of meaning that are longer than a word but learned as though they were single words include idioms (e.g., to be in the driver's seat) and slang (e.g., a basket case). The meanings are not literal combinations of the words; instead, they have unique meanings.

It is impossible to know precisely how many words are in a language, but for English, the estimates run to more than two million with new words added every year. Some words are taken from other languages. For example, *kayak* is an Inuit word, *noodle* is German, and *charisma* is Greek. New words are coined from contemporary concepts. In recent years, *blog*, *Frankenfood*, *morph*, and *soccer mom* have entered the language. Multiple-meaning words also lead to imprecision in word counts; consider the different meanings of *line* in a *line of type*, a *line at the box office*, a *fishing line*, to *drop a line*, and to *hand someone a line*. Thousands of words have more than one meaning, and some words have more than one hundred meanings (e.g., set, run). Although we cannot be certain about the number of words in English, we can be certain that vocabulary is the one aspect of language that no one ever completely masters. No one knows every word, but every word is known by someone.

It also is impossible to know how many words any

individual actually knows, and there are degrees or shades of knowing a word. We can know the meaning of a word, its sound, its spelling, when to use the word, and other words to which it is related. Preschool children, for example, learn several thousand words orally, but they can recognize only a few of them in their printed forms. As mentioned earlier, humans have an astounding penchant for expanding their vocabularies. Children utter their first words at about age one and have learned approximately 14,000 words by age six. High school graduates know about 45,000 words, and college graduates know 100,000 words or more. From our earliest years until adulthood, we comprehend more words that we hear or read than we produce in our own speaking or writing. In other words, we know many more words than we actually use. Shakespeare used only 18,000 different words in all of the works he produced—many fewer than most of us had stored in our mental lexicons when we were in high school and certainly fewer words than Shakespeare could comprehend.

In recent decades, a number of computer analyses of large bodies of words have been undertaken to determine the frequency of use of individual words. Some words (e.g., the, of, and, to, a, in, that, is, was) are used far more often than other words (e.g., accordion, ferrule, splice). Linguists Henry Kucera and W. Nelson Francis analyzed a body of one million words (i.e., word tokens) of printed text and determined that 50,000 different words (i.e., word types) occurred, but that a mere one hundred of those words accounted for about half the occurrences of all 50,000 different words (1967). English-language scholar E. D. Hirsch compiled a list of more than 5,000 names (e.g., Buffalo Bill), words (e.g., guru), proverbs (e.g., Half a loaf is better than none), and dates (e.g., 1776) that he believed to be essential for intelligent communication (Hirsch 1988). He argued that a national vocabulary of cultural literacy should be indispensable in any society. Swedish linguist Morris Swadesh identified one hundred concepts that he considered so basic that each of the world's 6,000 languages had words for them (Miller 1991). He included among the fifty-four nouns *woman*, *man*, *fish*, *bird*, *skin*, *sun*, *moon*, *earth*, and *fire*. Words other than nouns on his list of universal concepts included *we*, *this*, *that*, *drink*, *eat*, *sleep*, *stand*, *give*, *hot*, and *cold*. Word lists have been compiled for decades for every imaginable

purpose (e.g., survival words, sight words, comic book words).

LEARNING WORDS

Before learning words, infants begin to discern and analyze the world around them. They especially attend to shapes and mentally create object categories. As they hear words used by others, they begin to map the words onto some of the concepts they have observed. Assume children have observed a dog, a ball, a clock, a bed, and a teddy bear. The children recognize the shapes of the objects and this allows them to attach words they hear (e.g., dog, ball, clock, bed, teddy bear) to this prior knowledge. Sometimes this mapping process leads to overextension, such that all four-legged animals are referred to as dogs, and apples and other small round objects are referred to as balls. Later, children learn to sort out the relationships. The same process applies with actions, sounds, and smells. After children begin to absorb and produce their first words at about age one, the pace picks up rapidly, and they may produce up to two hundred different words by eighteen months and five hundred different words by age two, but this pace varies from child to child. Some infants produce only one word at a time for several months, but others seem to use two-word utterances shortly after their first words.

In a research study conducted by psycholinguist Eve Clark, a two-year-old child was able to produce 477 words, of which two-thirds were labels for objects. The array of words learned by this child included eighteen words for people (e.g., baby, boy), twenty-five words for animals (e.g., duck, mouse), eighteen words for vehicles (e.g., bike, sled), fourteen words for body parts (e.g., toe, nose), thirty-five words for toys (e.g., block, doll), fourteen words for clothing (e.g., sock, button), twelve words for furniture (e.g., rug, bed), eighteen words for utensils (e.g., spoon, bowl), thirty-one words for food (e.g., egg, carrot), twenty-four words for attributes (e.g., big, wet), and seventy-four words for activities (e.g., go, fall). The child also used words for locations, routines, and responses. Children gradually progress from naming and categorizing to differentiating words within and across categories (e.g., dogs and horses have a tail and four legs, but dogs bark and horses neigh). Learning new words involves first the comprehension

of words heard and subsequently the production of words orally.

The vocabulary of a language is complex. In learning about words, children must develop an understanding of their pronunciation and meaning and how to create new words through compounding and adding prefixes and suffixes. They must learn how some words are alike in some ways but different in other ways (e.g., hurricane, tornado). Children must learn that many words have more than one meaning and some meanings are expressed with synonyms. They must understand that word choice reflects the intentions of the speaker. Young people eventually must learn that many words may denote the same general meaning but have different connotations. For example, *funny*, *silly*, *hilarious*, *witty*, *goofy*, and *zany* refer to the same general quality, but each has a different shade of meaning. A *silly* person may be immature, and a *hilarious* person is extremely funny. A *witty* person is more likely to be bright and quick, but a *goofy* person is humorous by acting unintelligent. A *zany* person is entertainingly unusual.

The important roles of parents, caregivers, siblings, and others in word learning by preschool children cannot be overstated. The size of toddlers' vocabularies and their rates of vocabulary growth depend, in large part, on human interaction. These interactions allow children to attach meanings to words. Engaging in frequent interactive conversation enables preschoolers to learn not only words but also how to talk, use syntax, and develop expanding meanings. With communicative interaction, children appear to learn casually, and this may be attributed to the language instinct with which children are born. One way to account for children's rapid acquisition of language is that there is a human predisposition to language learning, although this predisposition must be nurtured by ample oral interaction. Large differences in vocabulary development can be noted between children who have such interactions regularly from about age two and those who do not. These differences carry into the school years, and children who begin school with limited vocabulary and limited language development are at a significant disadvantage compared to more fortunate children. In a later entry, what schools do to further language development is discussed.

Linguist Jean Aitchison (1994) has theorized about the ways words are stored in the mental lexicon. She

uses the analogy of each word's having two sides like a coin. On one side is the sound of the word, which enables us to orally recognize and comprehend a word we hear. On the other side is the word's meaning, which enables us to retrieve the word from memory and use it when we speak. When children acquire literacy, both sides of the coin—sound and meaning—they must also learn the word's spelling to enable their reading and writing the word.

The term *word webs* or *semantic fields* is used to describe ways in which words are related to one another in the mental lexicon. Semantic networks of interconnected words (i.e., word webs or semantic fields) are within our internal storage systems. The words are acquired through listening and reading and are retrieved from memory for speaking and writing. Storage and retrieval are accomplished rapidly because of the semantic interconnectedness of the words. Words relate to one another in at least ten types of association:

1. *Synonyms* are words with nearly the same meaning (e.g., skinny, thin, trim, scrawny, slender).
2. *Antonyms* are words with opposite meanings (e.g., birth-death, hot-cold, in-out).
3. *Collocations* are words that often occur together in language usage (e.g., green grass, torrential downpour, unruly behavior).
4. *Hypernyms-hyponyms* are the superordinate and subordinate words in a category. The hypernym is the category name (e.g., schools). Hyponyms are the subordinate members of the category (e.g., colleges, universities, high schools).
5. *Hypernyms-meronyms* are terms for wholes and parts. The hypernym is the whole (e.g., tree), and meronyms are the parts (e.g., trunk, branches, roots).
6. *Hypernyms-attributes* are words and the semantic features that describe them (e.g., hypernym: desert; attributes: dry, barren, hot).
7. *Hypernyms-functions* are words and descriptions of how they function (e.g., hypernym: refrigerator; functions: freezes ice, preserves food, holds decorative magnets).
8. *Coordinates* are words that share some semantic element but are not superordinate or subordinate to one another (e.g., carousel, Ferris wheel, roller coaster).
9. *Homophones* are words that sound alike but have different spellings and meanings (e.g., great-grate, plain-plane, here-hear).
10. *Homographs* are words with identical spellings but different meanings and sometimes different pronunciations (e.g., bank, coast, record).

Categories of semantic fields, as shown above, reveal some of the details of how words relate to and differ from one another within a broad domain.

Psychologist George A. Miller (1991) has described some of the most overarching or generic concepts or *superhypernyms* in language (which he calls *unique beginners*) under which all words are in some ways interrelated. He identifies twenty-five unique beginners that are nouns (e.g., activity, attribute, event, feeling, location) and fourteen that are verbs (e.g., motion, consumption, creation). These two sets of overarching unique beginners form the foundation of the semantic fields to which children add new words as they acquire them for oral and written language. Consider the following example using one of the unique beginners, *plant*. One type of plant is a flower. One type of flower is a lily. Using lily as a hypernym, some hyponyms are stargazer, snow queen, and mondeo. Some meronyms of lily are petals, stem, and leaves. Some attributes are beautiful, fragrant, and colorful. Some functions are wedding bouquets, table decorations, and funeral sprays. Some coordinates of lily are zinnias, roses, and marigolds. It is these networks or semantic fields that enable humans to comprehend and produce words seemingly without effort.

When children develop literacy, in most instances upon entering school, the new tools of reading and writing help with their refinement of vocabulary. Words serve different purposes when one reads and when one writes. Readers must recognize words and map them to meanings. Writers must choose words to convey ideas. Readers can get the sense of a word from the context in which it is found. Writers have the obligation to be more precise and use the best words to convey the intended sense. In the next two sections the continuation of language development in school is discussed.

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LANGUAGE DEVELOPMENT IN THE EARLY GRADES

The skills of speaking and listening, called oracy, are inextricably intertwined with skills of reading and writing, called literacy, but they are not the same. In school the four processes are referred to as the language arts. Although oracy and literacy co-mingle and support each other, they are treated separately in this entry to help the reader understand the developmental processes.

THE DEVELOPMENT OF ORACY IN THE EARLY GRADES

Most daily communication is conducted in spoken language. The abilities to speak and listen effectively can make substantial differences in what humans can accomplish. Children, as noted above, enter school at age five or six quite capable in their understanding and production of oral language, but that development does not stop at the schoolhouse door. Oral communication is defined as the process of interacting through spoken and heard messages in a variety of situations. The two processes, listening and speaking, are interrelated and involve transactions between at least two people.

Communicative competence is a term used to describe an array of language strategies appropriately used for different purposes in different situations. The emphasis on functional language development stems from research that modifies the views of psychologist Jean Piaget. He considered children younger than seven or eight egocentric, that is, unable to consider their listeners' wishes and viewpoints. Evidence by other researchers, such as psychologist Lev Vygotsky, has shown children to be sociocentric in that they seek social interaction with other children and adults. It is believed that function precedes form in language development. Before school, children use language for a range of social functions (instrumental, regulatory, imaginative, and others), and this type of usage increases during the early school years.

Oracy is a major tool for learning in elementary, middle, and secondary education. Prior to 1980, it was estimated that children in the early grades spent

as much as 60 percent of classroom time involved in listening. Teachers did most of the talking and asked 90 percent of the questions. The teacher primarily controlled school language, and children had fewer communicative opportunities in school than they most had had in the home. Children were passive, asked few questions, and spoke less in school than they had at home before they entered school. Instead of building on the interest and curiosity about language that many children bring with them to school, pupils were told to listen respectfully without interrupting, to stay on topic, and to respond with appropriate expressions of understanding messages. As speakers, they were encouraged to use appropriate vocabulary, correct pronunciations, and to speak in complete sentences.

Beginning in the 1980s, this imbalance changed, and there was a greater emphasis on involving children in speaking activities as well as listening. Listening and speaking often develop through children's engagement in language activities that are designed to enhance reading and writing ability as well as oral language. Greater amounts of classroom time were allocated to conversation and discussion. Attention was given to helping children learn to adjust their language to be more sensitive to their audiences. Children practiced conversational rules, turn taking, and topic shifting. A focus on using language in naturalistic settings became widespread. Among the listening and speaking activities were role playing, group discussion, and conversation in circles.

Children were given opportunities to use oral language to ask for information and make requests. They were given opportunities to share facts, opinions, and ideas in oral reports, in show-and-tell sessions, and in small and large group discussions. Pupils learned to follow directions requiring a sequence of steps and how to identify and respond to informational environmental sounds, such as fire alarms and school announcements. Asking questions to clarify topics or routines and retelling information sequentially were encouraged. Children used oral language to connect personal experiences to information heard as well as to share observations from school, home, or elsewhere.

Classroom time also was devoted to engaging pupils' imagination. When children engage in dramatic play, they use oral language to convey thoughts and feelings and to further develop their imaginations. They use different vocabulary and different speech

patterns when they act out various roles. Pupils were encouraged to speak audibly and with expression as they shared rhymes, riddles, and stories with their classmates. They engaged in individual and group singing, storytelling, and finger plays. Through choral speaking, role playing, creative dramatics, and puppet shows, children developed a number of oral language competencies. They compared stories they heard in class with stories from their own experiences and used a variety of words to express emotions or moods. Pupils told or retold imaginative stories and described familiar persons, places, or objects. Children discussed songs, tales, and legends from different cultures.

Children also were given opportunities to use personal criteria to express opinions and attitudes and to try to persuade their listeners to agree with them. They used oral language to resolve conflicts or problems. Through these kinds of in-school oral language activities, children expanded the variety of syntactic structures they used as well as increased their listening and speaking vocabularies. New words and new meanings for old words were learned through oral activities in the early elementary grades.

By the late 1990s, however, the attention given to oral language development began to wane in many schools as more states instituted rigid accountability systems with standardized tests, primarily of reading, writing, and mathematics. As a result of these tests and accompanying pressures, teachers were compelled to spend more time on literacy and mathematics to the detriment of oral language and other school subjects such as science, social studies, art, and music. Perhaps the pendulum one day will swing away from school curriculum controlled by testing mandates and return to techniques for developing oral language within a more rounded curriculum.

THE DEVELOPMENT OF LITERACY IN THE EARLY GRADES

Literacy is concerned with the written system of language. Earlier it was noted that spoken language can be traced back at least 50,000 years, but that writing systems are a relatively new achievement in human development. The Roman alphabet was developed in the sixth and seventh century B.C.E. It was derived from the older Greek alphabet, and it

is the basis of the alphabet used in English today. The evolution of written language enabled communication to exist without the face-to-face requirements of oral language. At the start of the twentieth century, psychologist Edmund Burke Huey (1908) wrote that the greatest achievement any psychologist could attain would be to analyze completely what humans do when they read. To do that, he believed, would be to describe the human mind and its most intricate workings, and to unravel the story of what he considered the most remarkable individual accomplishment of anyone's lifetime: learning how to read and write.

Most preschool children do not learn to comprehend or produce the written forms of words, so for most children, the development of literacy is left to the schools. Emergent literacy, nonetheless, begins to develop in children before they enter school. Through becoming familiar with books, having stories read to them, attempting to "read" by telling a story from its pictures, and attempting to "write" by scribbling and drawing, the processes of literacy emerge. For most children, literacy begins to develop from emergent literacy when they start school.

There they are faced with new challenges. Children find themselves in a social, emotional, and intellectual environment different from home. They become members of a group—a class of twenty or more children mostly like themselves. New routines must be learned. The attention of one adult must be divided among all the students. Pupils are compared to one another. It is during the first year or two of school, in kindergarten and first grade, when most children begin to read and write. As young children adjust to the culture of school and spend less time with parents or caregivers, they engage in a variety of literacy activities, and there are expectations that they will learn along with other children. Each child comes to school with a different level of language development, different words in the mental lexicon, and a different set of prior experiences. Some have been read to frequently, and others rarely. Nonetheless, by the end of the first grade, most of these individual, unique children have developed some degree of reading and writing ability.

Learning to read begins when children learn to identify and comprehend words in print; that is, they learn to recognize the printed forms of words

they already know. Part of this initial ability includes learning the connections between print and speech—the letter/sound correspondences that are part of the code of the language. Along with learning letter/sound relationships, children learn new words, word parts, and new meanings for known words. Their command of syntax expands, they learn to spell, and they develop systems of comprehension.

Learning to read requires the development of a number of understandings and the acquisition of a number of skills. Among them are the ability to distinguish between phonemes, to use letter/sound correspondences to identify the meanings of words, to use the context of what is being read, to understand and define unfamiliar words in a text, to develop strategies for comprehending what is read, and to become aware that reading provides the same kind of information as listening but through the medium of print. Reading development also includes understanding story elements such as settings, characters, problems, events, and solutions. It includes learning literary devices such as dialogue and figurative language, and learning about expository text structures such as causes and effects, main ideas and details, and chronological order. Learning to read means learning to use a text's punctuation, capitalization, and spacing as guides to comprehension. Reading involves not only understanding explicitly stated information but also making inferences from implied information. Reading well requires making judgments about what is read.

Learning to write includes learning to form letters, learning the spelling of speech sounds, developing legible handwriting, and learning to select the best ways to convey meaning. Learning to write necessitates developing an understanding of the conventions of sentence and paragraph structure, punctuation, capitalization, and organization of longer pieces of writing. As writers develop, they learn a number of purposes for writing and the special requirements of each, and they experience the processes of writing (e.g., planning, drafting, revising).

Reading and writing development requires a number of steps, but the steps are not innate or automatic. Children require instruction and practice. Not everyone learns to read and write in the same way or by following the same sequence. Teachers

vary the procedures they use to develop literacy in their pupils depending on the teachers' experience, knowledge, pedagogical philosophies, the availability of materials and time, and the dictates of those outside the classroom. Regardless of the approach the teacher takes, the following accomplishments are achieved by most children at the following grade levels:

1. Kindergarten children follow a line of print when being read to, notice when pages have been skipped by the reader, listen attentively when the teacher reads to the class, retell stories in some detail, make predictions while listening to stories, recognize and name some letters of the alphabet, use unconventional writing and invented spellings to express meaning, write their own names, answer questions about stories correctly, identify differences in speech sounds (i.e., phonemic awareness), and know some books by their titles.
2. First graders read age-appropriate text aloud, have a reading vocabulary of three hundred or more words, understand simple written instructions, spell some short words correctly, use some punctuation and capitalization, answer questions about material read by themselves, and write readable short sentences and short paragraphs.
3. Second graders comprehend age-appropriate fiction and nonfiction, read voluntarily, re-read sentences to clarify meaning, contrast characters and events in stories read by others, attend to spelling and punctuation when revising their writing, compare information from different sources, read irregularly spelled words, and pose answers to *why*, *how*, and *what if* questions.
4. Third graders correctly spell previously misspelled words, point out words or phrases causing difficulties in comprehension, read aloud with fluency from grade-appropriate books, distinguish between facts and opinions, write paragraphs with clarity after revision, share writing with others, infer word meanings from

context, make inferences about unstated information in text, and read books divided into chapters and extended nonfiction works.

It must be emphasized that reading materials should be age-appropriate and that some children will not attain these accomplishments at these grade levels. The initial steps in children's literacy development continue throughout their schooling and take on greater sophistication in the upper grades.

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LANGUAGE DEVELOPMENT IN THE INTERMEDIATE AND UPPER GRADES

By the time children enter the fourth grade, most of them have developed basic literacy skills. Periodic assessments undertaken by the federal government show that although less than 10 percent of fourth graders have achieved advanced literacy skills, about 25 percent are proficient in their development of literacy and another 30 or 40 percent may be characterized as having basic literacy skills. The remaining 25–35 percent of fourth graders have not achieved basic levels of literacy, and as a result, have a difficult time with schoolwork. The next section of this chapter discusses reasons why some learners make slow progress toward achieving desired levels of literacy in school.

In the intermediate and upper grades, the four language arts (listening, speaking, reading, writing) become more intertwined and mutually reinforcing. Older children expand their productive language abilities (speaking and writing) and receptive language abilities (listening and reading). Language learning in the intermediate and upper grades becomes more integrated. Students engage in fewer activities that are distinctly listening, speaking, reading, or writing. Instead, they develop sophistication in their comprehension of language, whether listening or reading, and in their production of language, whether writing or speaking. Students progress in their language development to fulfill four broad purposes. They use language for information and understanding, for literary response and expression, for critical analysis and evaluation, and for social interaction.

When using language for information and understanding, learners develop listening and reading skills through gathering and interpreting information from reference works, electronic sources, oral interviews, and pictorial sources. Students develop skill in notetaking, summarizing, categorizing, and organizing information. They make greater use of their prior knowledge as well as the structural and contextual cues in oral or printed language to develop meaning. Learners distinguish between relevant and irrelevant information, and they compare and contrast information from different sources.

Speaking and writing abilities develop in a variety of ways. Students acquire facility with the writing processes of prewriting, drafting, revising, and proofreading. They prepare oral and written reports on a range of topics, and they learn to develop information by using supporting materials, such as examples, anecdotes, and details. Students use appropriate vocabulary and sentence structures in their presentations of oral or written information, and they become more considerate and understanding of the audiences they are addressing and their purposes for providing information.

Intermediate and upper-grade students develop their use of language for literary response and expression through listening and reading. They learn to identify important literary elements such as foreshadowing, symbolism, metaphor, irony, and climax. Learners hear, read, and view materials in a wide range of genres on a variety of topics from a variety of authors. They improve their abilities to read aloud with expression to convey the meaning and mood of a work. Students develop skills in evaluating the literary merits of what they hear and read, and they recognize different levels of meaning of a literary work.

When speaking and writing for literary response and expression, students write poems, stories, essays, and plays that show increasing understanding of the conventions and genres. They develop ways to make their writing more distinctive. They become adept at presenting personal interpretations of literature as they speak and write about stories and books. Students continue to gain skill in drawing upon their own knowledge and experiences as they connect with an audience when writing or speaking. They learn to create sequels to stories and reviews of literature.

The development of language for critical evaluation and analysis includes understanding that individuals have different points of view and recognizing those differences in text they read or hear. Students learn to analyze and evaluate information, ideas, and language usage in different types of text, such as advertisements, editorials, documents, and reviews. They learn to assess the credibility of an author or a speaker and to develop sophistication in evaluating their own work and the work of others on a variety of criteria including originality, clarity, completeness, and reasoning. Students come to understand bias and certain propaganda techniques used in speeches and writings. They learn to compare different interpretations of the same event.

When speaking and writing for critical analysis and evaluation, students develop written and oral arguments for persuasive purposes through the use of details and evidence. They present, in papers and speeches, clear analyses of ideas, events, and issues, and support their positions through reasoning. Learners continue to refine their use of spoken and written language, including precise vocabulary to make effective presentations that can influence their intended audience. They present oral and written reviews of books, films, television programs, and performances, and they support their evaluations with references to elements of the work. Students learn to generate persuasive advertisements for products or ideas. They realize that they need to monitor and adjust their own presentations according to the conventions of the genre they use. In the intermediate and upper grades, students learn to view their own writing through the eyes of a reader and their own speaking through the ears of a listener, and they begin to experiment with ways to improve the language they produce.

Intermediate and upper-grade learners continue their development of the use of language for social interaction. In listening and speaking, they refine their verbal and nonverbal skills to improve communication. They become more attuned to listening attentively to build on the ideas of others with whom they are engaged in conversation. Students learn to express themselves clearly and convincingly in group discussions and conversations, and they understand more thoroughly the different roles of speakers and listeners in various types of oral communication. They learn to use language and style of expression

that is appropriate to the situation and audience, and they consider the interests and backgrounds of their audience.

When reading or writing for social interaction, students develop skills in writing personal letters, invitations, greetings, and electronic messages to acquaintances, relatives, and friends. The students read and discuss social communications of other writers, and they adapt some of these techniques in their own writings.

Although we have generally considered listening and reading, on the one hand, and speaking and writing, on the other hand, it must be reiterated that reading and writing are related processes of literacy, and they have many commonalities. Reading and writing may be thought of as an interplay between mind and text that brings about new learning. The two processes are dependent upon exposure to and use of written language. We use our reading abilities to construct meaning from written text by relating the text to our prior knowledge, experience, and beliefs. We use writing to construct meaning by producing written language based on our prior knowledge, experience, and beliefs. Through writing and revision, we clarify our understandings of what we already know.

Literacy is not a case of “either/or.” It exists along a continuum with illiteracy at one end and advanced literacy at the other. Words such as semiliteracy, marginal literacy, survival literacy, and functional literacy are used to describe points along the continuum. Extensions of the use of the term *literacy* to imply competence are found in such expressions as computer literacy, economic literacy, and cultural literacy. The term *aliteracy* is used to describe the condition of individuals who can read and write but do not.

An additional goal of literacy development in school is the development of *critical literacy*. This is the ability not only to read and write but also to understand the power relationships in society through assessment of written materials that underlie or advance these relationships. Critical literacy proponents argue that literacy is not neutral and that reading and writing are shaped by social processes and patterns of power within social settings. For example, the work of Paulo Freire (1970) in teaching Cuban illiterates to read was based on the realization that, without literacy, some would remain

on the bottom rung of the power structure ladder. Plantation owners in the antebellum United States did not allow their slaves to learn to read or write. The punishment often was severe if a slave even was caught with a book. Critics of high-stakes tests see these instruments as a way to ensure a permanent underclass of mostly minority, minimum-wage workers, because schools must pay greater attention to the memorization of facts than to the development of critical literacy.

Most humans develop proficiency in oral language before entering school, and that development continues to be refined and expanded throughout the school years. This is not the case, however, with literacy. A sizable number of children enter school with detriments that lower their likelihood of developing literacy with ease. The factors that inhibit the development of literacy and the further development of oracy are discussed in the next entry.

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FACTORS THAT INHIBIT LANGUAGE DEVELOPMENT

The language development patterns described thus far are characteristic of the majority of but not all, language learners. Factors that inhibit language development are present in the child, the home, and the school.

Severe cognitive deficiencies are among the child-based inhibitors of language development. Some of the deficiencies stem from neurological sources, some from low birth weight, and others from prenatal drug or alcohol abuse by the mother. Psychological or physiological conditions that develop during childhood also can lead to cognitive deficiencies.

Early language impairment may result in delayed language development in children. Hearing impairment is one cause of this delay. Language initially is oral; therefore, children with hearing impairments may acquire oracy and literacy slowly. Language delay may be noticeable to parents, relatives, preschool teachers, or others who are in a position to compare children. Language-delayed two-year-olds may not use two-word sentences such as *All gone* and *Go bye-*

bye, as most children that age do. They may not yet have fifty words that they can produce, as most two-year-olds have. Three-year-olds with delayed language may not be understood by their parents more than half the time. The delayed development may be an early indicator of a more general developmental disability or a neurological condition. There is variation in the rate at which children develop language. When there is a significant developmental delay, however, the children are likely to enter school far behind their peers, and it may become difficult for them to maintain the academic pace set by the curriculum—especially the development of literacy.

Children with uncorrected visual impairment may develop language quite normally up to the point of literacy acquisition. Much of what happens in school requires that children have the ability to read and write; therefore, it is imperative that any visual impairment be corrected. Schools usually provide visual screening tests for children who are entering kindergarten.

Another child-based factor that can delay language development is attention deficit hyperactivity disorder (ADHD). Symptoms of ADHD include an inability to pay attention and an inability to follow instructions. Children with ADHD often do not complete tasks, and they misplace things. They frequently are in motion or talk when it is not appropriate. They appear to daydream, and they interrupt other people's conversations. These characteristics contribute to a lack of attention to language learning and a delay in language development. ADHD typically is noticed when children are very young, but it may last into adult life. Children with ADHD often have difficulty developing their literacy skills throughout the school years—even though they may have normal or above-normal intelligence.

Dyslexia is a term for a congenital or hereditary condition that interferes with the acquisition of reading skills and often is a part of a broader language problem. Dyslexic children have difficulties with verbal coding, particularly phonological coding. Researcher Sally E. Shaywitz tracked dyslexics from elementary school through adulthood (Morris 2003). Based on the use of brain scans, she identified two groups. In one group, learners had a predominantly genetic type of dyslexia caused by gaps in their neural circuitry. A second group showed a more environmentally influenced type of dyslexia. There were no difficulties with the second group's language pro-

cessing systems, but they relied heavily on memory rather than using other linguistic centers of the brain. Shaywitz asserted that dyslexics of the latter type were more likely to attend disadvantaged schools.

Family-based factors that can delay language development are many, among them a family history of difficulty with literacy. Children whose older siblings or parents have had problems with reading and writing often have those same problems. If children are diagnosed with a reading disability, there is a higher than average chance that other family members have had similar disabilities.

The literacy environment of the home contributes to language development and, in particular, the development of literacy skills. The most important factor in the home is the quantity and quality of verbal interactions between parents or caregivers and children. It is through these interactions that vocabulary and oral language facilities develop. Shared conversations and reading to and with children make a large difference. Children reared in homes without such verbal interactions and without a value placed on literacy (e.g., reading materials in the home, parents or caregivers who are readers), therefore, are at a disadvantage throughout their elementary school years.

Related to home environment is the language or dialect spoken at home. If most of the language used at home is a language other than the one used in school, or if the dialect spoken at home is a nonstandard dialect, children will have to learn a second language or nearly the equivalent of another language when they enter school, in addition to developing literacy.

A final home-based factor that influences language development of children is the socioeconomic status of the family. Children whose families have low incomes are more likely to lack proper medical care, dental care, and nutrition. Youngsters from low-income families frequently live in homes with only one parent—usually the mother. Due to the demands of outside employment and the stresses of coping with poverty, these parents have less time for verbal interaction with the children. Low-income families also are likely to have limited resources for such items as books, children's magazine subscriptions, computers, and other advantages that contribute to language and literacy development. Low-income families, therefore, often are unable to provide the same level of support to their children as that enjoyed by children from families of higher income.

Research has shown that children from low-income families likely have learned fewer words and conventions of language than children from middle- or high-income families. In addition to vocabulary deficits, spelling, reading, and composition skills among these children may lag behind those of the more affluent children. These deficits are hurdles for the children and their teachers to overcome. Research on reading and writing achievement conducted over the past thirty years shows a significant language gap based on socioeconomic status, and this gap has widened rather than narrowed. Low-income children are more likely to attend substandard, underfunded schools. These schools often lack basic supplies, such as sufficient literacy materials, school and classroom libraries, funds for field trips, and specialists to teach art and music.

Family-based factors that contribute to delayed language development are difficult to separate from factors that stem from the school children attend and from the neighborhood and community in which they reside. In recent years, language development activities in school have been dramatically altered. The imposition of high-stakes testing demands has had serious negative effects by narrowing the curriculum, placing unwarranted pressures on children and teachers, and restricting what goes on in schools. Valuable school time is spent in test-preparation activities, and this situation is especially the case in underfunded schools that serve children who are economically disadvantaged. Pressures have been placed on school administrators and teachers to increase test scores or face punitive actions—even school closure. Teachers, in turn, devote too much instructional time to drilling students for tests, because students in some states face the consequence of grade repetition if they fail the tests. Children from more affluent homes are spared the test-preparation anxieties, because they are more likely to enter school with well-developed language abilities and, as a result, have little difficulty with high-stakes tests. Their background experiences and literacy resources in the home have better equipped them for test language and content.

When schools are in need of repair, have inadequate resources, and are located in dangerous neighborhoods, there tend to be more classroom interruptions and disciplinary problems and more negative rather than positive reinforcement from school personnel. As a result, language development suffers. Too often the least experienced and least qualified

teachers are assigned to the schools with the greatest needs. The demands of high-stakes testing isolate teachers from one another. The mood becomes competitive, and there is less discussion and sharing of ideas and resources. Parental or caregiver communication with teachers in underfunded schools may not be as prevalent as it is in more affluent areas. Single parents or caregivers often must work long hours to provide for their children. Sometimes the parent cannot leave work, for fear of job loss, to attend school meetings or conferences. In some cases, the parent or caregiver has no telephone or has lost phone service due to unpaid bills. Transportation to and from the school also can present major problems for the person who has no car or access to public transportation. It is well documented that children whose parents are involved in school affairs usually do better in school.

Language development does not proceed in an orderly fashion for all children. There are child-based, family-based, school-based, and societal factors that play important roles in how rapidly and how well language develops. Some deficits never may be overcome because the window of learning one's native language with ease begins to close at least by the time of early adolescence.

Several aspects of language have not received the instructional attention that is warranted by their prevalence in spoken and written language. Among them are onomastics; expressions such as idioms, proverbs, and catchphrases; slang; special sayings such as slogans and mottoes; and abbreviations. The next section examines these colorful but often overlooked aspects of language.

Dale Johnson and Bonnie Johnson

OTHER ASPECTS OF LANGUAGE DEVELOPMENT

ONOMASTICS

Onomastics is the study of names. Names are so commonplace that they often are ignored as a source of material to enrich language learning. Humans seem to have a propensity to attach a name to everything.

This eliminates confusion when referring to particular persons, places, and things, but humans go beyond this practical type of naming to include names for things such as boats (e.g., *Bev's Barge*) and cars (e.g., *The Clunk*). Single-family homes with names usually are expensive real estate (e.g., *Southwind Manor*, *Murmuring Pines*). There are many categories of names, including *eponyms*, *toponyms*, *pseudonyms*, and *demonyms*.

Eponyms are words named after people, and they are numerous in English. The medical profession lists at least 15,000 eponyms. Among them are *Down syndrome* named for British physician John Down (1828–1896), *Parkinson's disease* named after British surgeon James Parkinson (1755–1824), and *Alzheimer's disease* named for German neurologist Alois Alzheimer (1864–1915). Eponyms can be found in nearly every category of words. Under the category *plants*, eponyms include *bibb lettuce* (Jack Bibb, 1789–1884), *boysenberry* (Rudolph Boysen, 1895–1950), and *douglas fir* (Scotsman David Douglas, 1798–1834). *Guppy* (after Trinidadian R. J. Lechmere Guppy, 1836–1916) is an example of a fish eponym, and *graham crackers* (after Sylvester Graham, 1795–1851) is an example of a food eponym. Some other eponyms in common use are: *blanket* (noun), *blurb*, *boycott*, *cardigan*, *diesel*, *Frisbee*, *maverick*, *Reuben sandwich* (double eponym), *salmonella*, and *watt*.

Toponyms are words named after places. *Paisley* takes its name from the Scottish town of Paisley where the pattern originated. *Tuxedo* comes from Tuxedo Park, New York, where the formal wear became popular in the 1880s. *Canaries*, the tiny yellow birds, are named after the Canary Islands. Other common toponyms include *mayonnaise*, *tangerine*, *denim*, and *rhinestone*.

Pseudonyms are names that people use that are different from their birth names. People use pseudonyms for a variety of reasons: to avoid gender or ethnic discrimination, to hide one's real identity, and to simplify a birth name, among others. Authors sometimes use pseudonyms that are called pen names. Table 23.1 shows well-known authors' pen names and their birth names.

Demonyms are names for people who live in specific places. For example, a person from New York State is called a New Yorker. A person from Florida is a Floridian. Attempts have been made to identify rules for

Table 23.1

Pen Names

Pen Name	Birth Name
Mark Twain	Samuel Langhorne Clemens
George Eliot	Mary Ann Evans
Agatha Christie	Agatha Mary Clarissa Miller
Lewis Carroll	Charles Lutwidge Dodgson
Dr. Seuss	Theodore Seuss Geisel

Source: Bonnie von Hoff Johnson, *Wordworks: Exploring Language Play*. Golden, CO: Fulcrum Resources, 1999.

Table 23.2

Demonyms

City, State	City Demyonym	State Demyonym
Baraboo, Wisconsin	Barabooian	Wisconsinite
Council Bluffs, Iowa	Council Bluffsian	Iowan
Long Beach, California	Long Beacher	Californian
Lubbock, Texas	Lubbockite	Texan
Montpelier, Vermont	Montpelierite	Vermonteer
New Orleans, Louisiana	New Orleanian	Louisianian
Portland, Maine	Portlander	Mainer

Source: Paul Dickson, *Labels for Locals: What to Call People from Abilene to Zimbabwe*. Springfield, MA: Merriam-Webster, 1997.

forming demonyms; however, constructing demonyms usually is a result of what the local denizens prefer to call themselves. Table 23.2 illustrates the variety of demonyms within the United States.

There are other areas of onomastic study such as *odonyms* (street names), *anonymisms* (storm names, such as Hurricane Andrew), *nicknames* (e.g., The Big Easy, The Cornhusker State), *apronyms* (names that seem to fit one's profession, such as Sara Bones, M.D., and Marvin Dime, coin dealer), and unusual town and city names (e.g., Two Egg, Florida; Peculiar, Missouri).

PROVERBS

Proverbs are concise statements that give advice (e.g., Haste makes waste) or make an observation about living (e.g., They know most who know they know little). Most proverbs are quite old and can be found in all cultures. Proverbs from long ago include *You can lead*

a horse to water, but you can't make it drink (1100s); *Out of sight, out of mind* (1200s); *Time heals all wounds* (1300s); *Still waters run deep* (1400s); *Feed a cold, starve a fever* (1500s); *Don't cry over spilled milk* (1600s).

Proverbs often use rhyming words (e.g., Two in distress makes sorrow less) or alliteration (e.g., Never trouble trouble till trouble troubles you). Sometimes proverbs are metaphors (e.g., Don't judge a book by its cover). There are several proverbs that contradict one another. Among them are:

A heavy purse makes a light heart; and Money isn't everything.

The early bird catches the worm; and Late is often lucky.

The squeaky wheel gets the grease; and Silence catches a mouse.

Slow and steady wins the race; and Slow help is no help.

Nothing ventured, nothing gained; and Better safe than sorry.

Look before you leap; and Those who hesitate are lost.

Too many cooks spoil the broth; and Many hands make light work.

Although many proverbs date back centuries, some are of more recent vintage and have American origins. A few of these are: *Money doesn't grow on trees* (1750); *If the shoe fits, wear it* (1773); *An apple never falls far from the tree* (1839); *There's always room at the top* (1900); *You can't unscramble eggs* (1928); *One who slings mud loses ground* (1940); and *The best things in life are free* (1940). Children in the intermediate and upper grades begin to develop an awareness and understanding of proverbs.

IDIOMS

An idiom is an expression whose meaning is different from the usual meanings of the words that comprise the idiom; the expression cannot be taken literally. For example, the idiom *to get cold feet* does not mean that one's feet are chilly. It means that one is reluctant to do something. There are so many idioms in the English language that entire dictionaries of idioms have been compiled. For those whose first language is not English, or for young

Table 23.3

Idioms**Animals**

a wild goose chase	to call off the dogs	to take the bull by the horns
living high on the hog	a white elephant	to get on one's high horse
monkey business	a sitting duck	a cash cow

Colors

to paint the town red	to have a green thumb	to talk a blue streak
to get a pink slip	rose-colored glasses	not to have a red cent
to be true blue	to see red	to look green around the gills

Food

to spill the beans	sour grapes	to dangle a carrot
to bring home the bacon	to have egg on one's face	one's bread and butter
pie-in-the-sky	icing on the cake	a piece of cake

The Body

a sight for sore eyes	at your fingertips	to put one's foot in one's mouth
sticky fingers	head in the clouds	two left feet
to have a big head	hand over fist	to have one's nose in the air

Numbers

to put two and two together	on cloud nine	to zero in on
in seventh heaven	to dress to the nines	to put in one's two cents
to two-time someone	behind the eight ball	a three-ring circus

Source: Bonnie von Hoff Johnson, *Wordworks: Exploring Language Play*. Golden, CO: Fulcrum Resources, 1999.

children who are developing language, learning idioms can be challenging.

Many idioms have staying power, as the following idioms and the dates they entered English reveal: *at a snail's pace* (1400), *to keep one's nose to the grindstone* (1532), *too many irons in the fire* (1549), *to smell a rat* (1550), *to walk on eggs* (1621), *not to hold a candle to* (1640), *to have bigger fish to fry* (1660), *with flying colors* (1692). William Shakespeare is credited with coining several idioms that still are in use today, including *it's Greek to me*, *salad days*, *green-eyed monster*, *something is rotten in [the state of] Denmark*, and *to go against the grain*. Other well-known writers used idioms to make their writing more colorful. Examples include Edgar Allan Poe (*to go by the book*), Charles Dickens (*before you can say Jack Robinson*), Bret Harte (*to cost a pretty penny*), and Arthur Conan Doyle (*crystal clear*).

Part of the richness of language learning is knowing the story behind the origin of some idioms. Although idioms are figurative expressions, many

originally had literal meanings. The idiom *to give someone the cold shoulder* comes from a practice popular during the 1800s. When an unexpected, unwanted visitor appeared on one's doorstep around meal time, that visitor might be fed a piece of cold meat—often a cheap shoulder portion instead of something more elegant or substantial. *To strike while the iron is hot* can be traced to a tale by Chaucer in 1386. It originally referred to the work of blacksmiths who had to shape iron before it cooled. Grade school children often enjoy using idioms in their speech and writing and find them amusing.

Idioms can be found in most languages. Some foreign language idioms are comparable to idioms in common use in English. For example, German speakers might say, *Es liegt mir auf der Zunge*, and English speakers would say, *It's on the tip of my tongue*. Americans say that someone is *rolling in money*, and Germans say, *im Geld schwimmen* (swimming in money).

Some idioms fall into categories, as illustrated in Table 23.3.

SLANG

Slang refers to words and expressions created by subcultures for known concepts. *Plastic* is slang for credit cards. Slang is not jargon, which is words and expressions created by members of a particular occupation. Jargon usually is more technical than slang. Although some slang might be offensive to certain individuals, much slang has been around so long that it eventually became a part of Standard English. Words such as cranky, groggy, and dull (i.e., boring) are words that originally were considered slang. Some slang, like some idioms, has been in use for a long time. For example, *broke* (i.e., lacking money) entered English in 1661, *lowlife* in 1766, *flunk* in 1837, and *mouthpiece* (i.e., a lawyer) in 1857. Slang from the early 1900s included *gooey* (1903), *dud* (i.e., a failure, 1904), and *cushy* (1915). For a slang term to earn longevity, it must be picked up by more than just members of the group that coined the term. With today's mass media, a slang term that finds its way to a medium with a large audience will have a better chance of becoming part of our everyday language than will those that do not receive media coverage. Some concepts seem to generate a wealth of slang. These include money (e.g., greenbacks, bread, lettuce, moola, do-re-mi), cars in poor condition (e.g., crate, beater, junk heap, rust bucket), and important people (e.g., big cheese, high mucky-muck, big enchilada). Slang is a part of everyday language, and its use is especially appealing to youth who want to demonstrate that they are members of a subgroup.

CATCHPHRASES

Catchphrases are sayings that have been popular with a large group of people during a particular time. *Chalk that up to experience* is a catchphrase from the 1800s. As with slang, idioms, and other types of colorful words and expressions, many catchphrases have become so commonplace that they have worked their way into Standard English. Familiar catchphrases include *all dressed up with no place to go* (1914); *last of the big spenders* (1920s); *famous last words* (1930s); *back to the drawing board* (1940s); *Is it bigger than a breadbox?* (1950); *Don't call us, we'll call you* (1961); *on a scale of one to ten* (1970s); *been there, done that* (1980s); and *Get a life* (1990s).

SLOGANS

Slogans are sayings that try to persuade readers or listeners to support a particular person, product, or position. Slogans usually are brief and often rhyme. Examples of campaign slogans that supported certain candidates include *Tippecanoe and Tyler too* (1840, William Henry Harrison), *Phooey on Dewey* (1948, Harry S Truman), *I Like Ike* and *We're Madly for Adlai* (1952, Dwight D. Eisenhower and Adlai Stevenson), and *The Nation Needs Fixin' with Nixon* (1972, Richard M. Nixon).

MOTTOES

Mottoes are sayings that often inspire readers and listeners. They can be used as tools of persuasion, but they are not commercial. Some mottoes have only one word. For example, *Forward* is the motto of the State of Wisconsin. One of inventor Thomas Edison's mottoes was *There is no substitute for hard work*. Theodore Roosevelt's motto was *Speak softly and carry a big stick; you will go far*.

ABBREVIATIONS

Abbreviations, which are shortened forms of words or phrases, can be traced back to ancient Egyptian, Greek, and Roman written languages. Dictionaries containing hundreds of thousands of abbreviations in English have been compiled, but they all fall into five major categories: initialisms, acronyms, clipped words, blends, and words that are abbreviated in writing only. They are learned in the same ways as words and idioms.

Initialisms are abbreviations that can be spoken only as letters. Common initialisms include *AI* (artificial intelligence), *CPR* (cardiopulmonary resuscitation), *ER* (emergency room), *FBI* (Federal Bureau of Investigation), *RDA* (recommended daily allowance), and *TBA* (to be announced).

Acronyms are abbreviations that are pronounceable words and are made from the first letter or letters of a group of words. The number of acronyms has exploded since World War II. Some well-known acronyms include *FEMA* (Federal Emergency Management Agency), *NATO* (North Atlantic Treaty Organization), and *UNICEF* (originally, United Nations International Children's Emergency Fund). Some acronyms have

become so familiar that it is easy to forget that they are not single words. Examples include *scuba* (self-contained underwater breathing apparatus), *radar* (radio detecting and ranging), and *laser* (light amplification by stimulated emission of radiation).

Clipped words are abbreviations in which parts of words stand for entire words. Words can be clipped from the front (e.g., *burger* from hamburger), the back (e.g., *chimp* for chimpanzee), or both front and back (e.g., *flu* for influenza). Some familiar clipped words include *auto* (automobile), *demo* (demonstration), *lab* (laboratory), *phone* (telephone), and *pro* (professional).

Blends are abbreviations that consist of two or more other words. Blends also are called *portmanteau* words. Common blends include *brunch* (from breakfast and lunch), *flurry* (from flutter and hurry), *glimmer* (from gleam and shimmer), *infomercial* (from information and commercial), and *splatter* (from splash and spatter).

Some words are abbreviated for writing only. Examples of these words include *adj.* (adjective), *attn.* (attention), *bldg.* (building), *blvd.* (boulevard), *co.*

(company), *dept.* (department), *Dr.* (doctor), *hr.* (hour), *Mr.* (mister), and *tbsp.* (tablespoon).

Most children have a fascination for words and language practically from birth, and many exhibit natural talents for language manipulation. Children develop language abilities through playing with words and expressions. There are two benefits to children when schools incorporate activities with the aspects of language described in this section: children's interest in language is enhanced, and they learn to comprehend and produce these frequently occurring language elements.

A newborn child faces a long journey in language development that begins with the first cooing sounds and continues to the level of sophistication in comprehension and usage that they achieve by the time they enter high school. For some the journey is smooth, but for others it is bumpy. The acquisition of spoken and written language just may be the greatest intellectual feat of anyone's lifetime.

Dale Johnson and Bonnie Johnson

GLOSSARY

ADHD. Attention deficit hyperactivity disorder, characterized by impulsivity, inattentiveness, and lack of motivation.

Blend. A word consisting of abbreviated forms of two or more other words. *Caplet* is a blend formed from *capsule* and *tablet*.

Catchphrase. A phrase or sentence popular with a large group of people. “On a scale of one to ten” is a catchphrase from the 1970s.

Cherology. The study of signs and gestures and their functions in sign language.

Clipped word. A type of abbreviation in which a part of a word stands for the word. “Burbs” is a clipped word for suburbs.

Conversion. A word whose part of speech has changed without adding a prefix or a suffix. In the sentence “Dan passed the final,” the word “final” has been converted from an adjective to a noun.

Dactylogy. The study of finger movements that correspond to letters or letter combinations used in finger spelling by some hearing-impaired people.

Dyslexia. Reading disability characterized by delayed phonological coding in persons with adequate vision and hearing and normal intelligence and language development.

Emergent literacy. Development of the association of print with meaning and the awareness of reading and writing concepts.

Eponym. A word named after a person. “Boycott” is an eponym named after Captain Charles Boycott (1832–1897).

High-stakes test. A test with serious consequences (e.g., repeat the grade, receive no diploma) for failure.

Holophrase. A single word used to express the meanings of a phrase or a sentence (e.g., a baby says, “puppy,” but means, “Where is the puppy?”).

Idiom. An expression whose meaning is different from the meanings of the individual words. “To paint the town red” means to celebrate in a big way.

Initialism. A type of abbreviation that can be spo-

ken only as letters. FDA (Food and Drug Administration) is an initialism.

Jargon. Words or phrases that are common to a specific occupation or hobby. “Rubric” is an example of education jargon.

LAD (Language Acquisition Device). A theorized innate cognitive characteristic that enables an infant to acquire language naturally.

Lexeme. A lexical item of meaning that may be a word or a nonliteral expression such as an idiom.

Lexicon. A work of reference (e.g., a dictionary, glossary, word list) that lists and explains words.

Literacy. Fluency in reading and writing.

Literary response. A cognitive or emotional reaction to what is read.

Mental lexicon. All the words, meanings, and related information about the words in a person’s mind.

Morpheme. A minimal unit of form and meaning including words, prefixes, suffixes, and inflected endings (e.g., walks, walking).

Morphology. The study of the structure of words and their meaningful units.

Motto. A word, phrase, or sentence that is particular to a person or group of people and is intended to inspire others. The motto of the state of New Hampshire is “Live free or die.”

Onomastics. The study of names.

Oracy. Fluency in speaking and listening.

Orthography. The study of written symbols and their functions in language.

Paralanguage. Voice variation, gestures, and facial expressions that affect meaning.

Phoneme. A minimal unit of speech sound used in combinations to form words.

Phonology. The study of speech sounds and their functions in language.

Pragmatics. Language choices and their effects in social interactions.

Proverb. A saying that makes an observation or offers advice. Proverbs often are metaphorical; for example, “Make hay while the sun shines.”

Semantics. The study of the meanings of words, sentences, denotations, connotations, implications, and ambiguities.

Semiotics. The theory of signs, their meanings, and relations in language and life.

Slogans. A word, phrase, or sentence that is intended to be influential or persuasive. A 1948 Truman campaign slogan was “Don’t tarry—vote Harry.”

Syntax. The study of the structural patterns of acceptable word order in phrases and sentences.

Telegraphic speech. An early stage in language

development in which all but essential words are omitted.

Toponym. A word named after a place. “Limousine” is a toponym from Limousin, France.

Unique beginners. Overarching categories of concepts (e.g., event, feeling) from which all subordinate concepts stem.

Word webs. Networks of interrelated words.

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SEMIOTIC PRINCIPLES AND HUMAN COMMUNICATION

Semiotics is the study of how meaning is made both consciously and unintentionally through the activity of signals, signs, symbols, and systems of signs and their interactions. As an example, the sun has been used by humans to indicate a variety of information. Louis XIV of France was known as the Sun King, an indicator of his power and glory. People may use the phrase “her sunny smile” to indicate the warmth of a person. The dashboard of an automobile utilizes the iconic marker of a sun to show where to turn on the lights of the car. People indicate happiness through phrases such as, “You are my sunshine.” Each of these instances employs a sign, symbol, or system of signs used in communication acts. Semiotics is the study of how signs connect to other signs and become communication. This process is called semiosis, and is the study of the actual processes and effects of action and the making of meaning by humans, other animals, and nonhumans in culture and nature. Therefore, semioticians study the processes and exchanges of the interactions that occur between people, other animals, and events that transpire as cultural, biological, and chemical exchanges.

Semiosis is seen as a dynamic and constant process. Whenever people ask how or what happened, or what led from step one to step two of an exchange or interaction, they are engaging in a semiotic hunt for the signals and signs of activity. As examples, people and other animals interpret and act upon the noise and smoke of a developing forest fire, a child is pulled away from a growling dog by an adult, and a teacher decides that a student who didn’t turn in her mathematics homework receives a zero. In each of these events, there is a process of interactions and exchanges between animals, people, and nature, or

a deliberate setting where activity creates other activity. In the example of the forest fire, usually smoke and flame represent, or act as signals of, danger to all living beings. However, signs and signals can also be misinterpreted. To a forester, the forest fire could represent nature’s ability to self-regulate and rejuvenate the forest; the growling dog was perhaps actually being friendly and trying to get attention, or the child did not turn in her homework because there had been a family emergency and she had been expected to take care of her brother and sister. Semiotics is the study of the process of how signs, symbols, and systems of signs evolve and can be interpreted.

Semioticians view language as a component of a range of communicative processes that help in the awareness about what is known and how things are known. Semiotics extends the study of human language as it expands the concept of language to the deliberate and unintentional communicative interactions of culture and nature. It makes a difference where someone lives, such as in a city or a rural area, just as it makes a difference whether someone grows up as a male or female in a particular society, in how one uses language to communicate. For example, in Australia, if one wants a portable light source, he/she asks for a torch. In the United States, someone asking for a torch in a dark situation would elicit a different response from an American. Context also makes a difference in reference to a species of animals, such as cows, where they are born and if they are in a culture where humans regard them as a food source or as special creatures. Semiotics investigates the diverse and inverse relationships between people, cultures, and natural phenomena; semiotics can be seen at the heart of every experience and event. Any social reality or culture is a community of meaning

making, and language in any community is more than shared words or sentences. A shared cultural base means that there is an “exchange of meanings in interpersonal contexts” where people act out the social structure in their daily lives, “affirming their own statuses and roles, and establishing and transmitting the shared systems of value and of knowledge” (Halliday 1978, 2). Those shared values exist as semiotic pathways where people use and interpret signals, symptoms, signs, indices, symbols, and names to communicate information about society. A U.S. flag flying at half mast from a public building indicates that someone important to the nation has died or that there has been a publicly acknowledged disaster, such as 9/11, which in itself has become a sign that represents the destruction of the World Trade Center, the attack on the Pentagon, the airplane crash in Pennsylvania, and the erosion of feelings of immunity from terrorism for Americans on September 11, 2001.

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SEMIOTIC PRINCIPLES

There are many discussions on using signs to engage in understanding how humans communicate, either effectively or ineffectively, and how signs have been used specifically in human meaning making (Deely 1990). Three influential twentieth-century semioticians with specific theories concerning semiotics were the Swiss linguist Ferdinand de Saussure (1857–1913); the American Charles Sanders Peirce (1839–1914); and Thomas Sebeok (1920–2001), a Hungarian who did much of his work in the United States but extended his work to engage semioticians working internationally.

FERDINAND DE SAUSSURE

Ferdinand de Saussure’s theory on semiotics grew from “his lecture notes from 1907 to 1911 on general linguistics” (Smith 2001, 54), and focused on the study of language. Saussure discussed language comprising two aspects, the signified and a signifier. The signifier is the sign/word that society has agreed upon to represent a specific thing and the aspect of

the sign that is the “signified” is the concept, or set of concepts about that sign that evolves or emerges from social usage. There is, according to Saussure, an arbitrary relationship in language between a sign of a word and how society uses the word/sign. Saussure used the word *tree* as his illustration. The word *tree*, in English, is an arbitrary word, but it is the word used as the sign for tree. The use of the word *tree* for a speaker of English will bring an image or concept of a tree to the signifier, so that a treelike image, the signified, comes to mind. If the word *tree* is used when a very young child points to a flower or a log, the child will be “corrected” and be given the word *tree* as the signifier for the tree object. Therefore, the child will form a series of communicative relationships making distinctions between things and people and will know the difference between a tree and a flower, and a tree and a pole, and a tree and a tall man. People share a general concept of “trees” so that if the word *tree* occurs or a sentence pattern is used with the word *tree*, such as, “a chestnut tree” or “that group of trees,” a speaker of English does not expect to see a clump of flowers or a stretch of grass. The sign of tree is not representational—tree is an agreed-upon sign. Tree is the signifier that means tree.

The word *tree*, however, can be a signified concept, such as, “He is as unbending as that tree.” The signification of the word *tree* in society has cultural implications and agreements and it is the signification of tree that becomes the point of engagement and discussion. For example, a friend of mine went to a Chinese restaurant with a boy he mentors as a Big Brother. The boy could not remember the word for the dish he wanted but said, “those things that look like little trees.” My friend was able to understand that the boy was referring to broccoli because of how the notion of little trees was being used in that context. Different cultures or subgroups within a culture could have varying perspectives on trees, such as the use and value of trees, the use or value of places that trees grow, or who makes decisions about trees. Although the word *tree* is the signifier of the thing that is a tree, culture, through societal discussion, determines the signification of what meaning and value is given to a tree, or a group of trees, at any given time. Given that meaning is constantly undergoing change, semiotics is not just language or an ascribed term, rather it is the cornerstone of agree-

ments and understandings at the core of social life (Blonsky 1985).

CHARLES SANDERS PEIRCE

Charles Sanders Peirce's work on signs (in Merrell 1995; Smith 2001) evolves from his extensive discussion on signs as being universal phenomena and basic to human experience. He accords signs the primary medium of human communication. He stated, "We think only in signs . . . in use and experience meaning grows" (Peirce 1931–58, 53). His discussion of signs catalogs the process, or the semiosis of how thought forms into signs through features that he described as firstness, secondness, and thirdness as a streaming effect. Firstness would be that aspect of the sign as a "quality, sensation, sentiment . . . the mere possibility of some consciousness of something" (Merrell 1995, 38). For the purpose of this discussion imagine a person noticing a small, black, furry creature on four legs with a tail in his backyard, assuming that it must be a cat. The initial recognition is the firstness of the concept.

Secondness is considered what something is in relation to something else. For example, that same person, when observing the small, black, furry, creature then begins to make a distinction between a cat and a skunk. The person would observe, "That is not a cat," while taking in information that what he was looking at was a small, furry, black *and white* creature, with four legs and a tail, but not quite knowing what the creature is.

Thirdness would be the mediation or the negotiation between points of evolving information: (1) that it is a small, black, furry creature (firstness); (2) it is not a cat (secondness); and (3) that it is other than a cat; it has a white stripe upon its back and tail and then the signification, or consciousness, along with having the convention or knowledge of other not-cat creatures, forming the category of skunk (thirdness).

Each act ties into one another and requires a flow of knowing or translation of knowing between perception and consciousness of what something is and what is known about it. It is not a question of a person's intelligence as much as having a perception of a concept, a framework or convention of knowledge, as well as an experiential base for that concept. As an example, although there are still many

places in the world where computer access is limited, no one expects a school in the United States to be newly stocked with typewriters. The entire set of expectations, language, behavior skills, and even products having to do with how schools prepare students for writing acts has changed since the mid-1980s and the ubiquity of personal computers. Many ten-year-old children would not know what they were looking at if they were given a box of carbon copy paper suitable for making multiple copies of a document on a typewriter, although they would understand current computer-related concepts and terminology such as being "online" and getting "email."

Peirce's work in semiotics is a complex system of organizing communicative processes. Once the concept of a sign having firstness, secondness, and thirdness is comprehended, Peirce presents ten classes of signs (Merrell 2001) to help a semiotician discuss art, mathematics, time, the sciences, and philosophy. Peircian semiotics creates a process of semiosis as flowing from sign to sign, of being linked to extending and multiple sign systems so that each sign is inevitably connected and related to other signs. For example, the sign "child" can be related to youth, issues on parents, health, and an evolving myriad of signs depending upon the context and the sign user. Peirce did not believe in meaning as a stable or given entity, but as a continually changing process depending upon how a sign was linked to another sign. For example, the concept of spam used to refer to a canned and processed meat product, but now spam, as a term, has been linked to unwanted email and evolved in meaning. Signs are always going to change according to the user and how the signs are contextually linked.

THOMAS SEBEOK

Thomas Sebeok (1920–2001) began his academic career as a linguist (Deely 2001) but his work in semiotics, which encompasses both Saussurian semiotics and Peirce's semiotic schema, extended from a science of signs to a doctrine of signs and he viewed semiotics "as the umbrella term for the doctrine of signs in its full extent" (p. xxv). Sebeok invited scholars in diverse fields of study to apply semiotic analysis to other animals (zoosemiosis), plants (phytosemiotics), and to open the study of signs as

biosemiotics (Hoffmeyer and Emmeche 1999). Sebeok's vision of semiotics as a general doctrine extends the study of signs to incorporate the biological, or all living things, as well as microorganisms. Therefore, as Saussure posited, semiosis is not just what happens as a product of the interactions between language and philosophical or cognitive factors; instead, semiotic study encompasses evolving interactions of the natural, cultural, and even imagined world. A child who grows up learning to be aware of the impending smell of snow adjusts to weather, food, terrain, the types of animals, and hears different stories or sagas of goodness and courage than the child who grows up in a desert. Semiotics, according to Sebeok (1994), includes how any being or thing creates or reacts to messages in a given context. People who utilize semiotic analysis are able to examine in detail messages, their frameworks, and receivers or receptors as an ongoing and changing process. Sebeok's response to the question, "What is semiotics?" was that it is "the exchange of any messages whatsoever—in a word, *communication*." (Nuessel 2001, 13) A goose honks as a warning of danger to goslings, human pulse rates increase at times of excitement or illness, and a teacher uses grades of A, B, C, D, or F to symbolize a student's effort in a class. Sebeok saw semiotics as the process of the exchange of signs and sign systems that humans use in any type of communication.

Linda J. Rogers

USING SEMIOTICS

There are extensive discussions on the variety of signs and their descriptions, as well as what signs do, and who or what uses signs (Eco 1979; Deely 1990; Noth 1990; Sebeok 1994; Merrell 1995; Smith 2001), but for the purpose of this discussion I will focus upon humans using signs. As Eugen Baer stated, "While the whole universe may be perfused with signs, and while innumerable species may be using signs, only humans actually make signs the object of systematic studies, only we humans practice semiotics" (2001, 8). The basic premise of Many semioticians is that semiosis consists of a three-way relationship. That is, in any given sign vehicle, there is the sign itself that stands for something else, a referent (what the

sign represents), and the user or interpreter, who makes distinctions between the referent and the sign. The word school can be a sign for a place, as in a building or center, where learning happens; it is also a referent in that different people and different cultures have a variety of understandings of what school is, who has access to schooling, and what is appropriate in teaching/learning situations. Both the sign and referent change in relation to whom and for what purpose they are being interpreted. A teacher may have a different understanding or interpretation of school than a student, parent, or a community. Each aspect of the three-way process is interdependent upon the others.

To illustrate that, consider using the concept of school as the referent of a sign. The referent of a sign brings with it a constantly evolving set of ideas, expectations, and impressions depending on who is discussing the concept of school. So, although a semiotic relationship can be drawn between the sign, the referent, and the interpreter, that relationship is always in motion and continuous. Each sign is dependent upon the other signs with which it is connected. Therefore, the sign, "school," needs to be seen in relation to other signs, such as: child, teacher, a person with disabilities, a school event (testing, retention, graduation), or the history of schooling, and those signs are dependent upon the innumerable signs and interpretations that are present in that particular discussion.

There are basic semiotic tools that semioticians use to investigate their various fields and disciplines to help them refine and/or make distinctions in delineating the functioning of signs: referents, and interpreters. Sebeok (1994), Danesi (1994), and Danesi and Perron (1999) list six types of signs: signals, symptoms, icons, indices, symbols, and names. Frank Nuessel's article in Simpkin and Deely's *Semiotics 2000: "Sebeok's Century"* (2001) gives another very useful summary of these definitions:

1. Signal: This is a sign that naturally or artificially triggers a reaction in or to a receiver. A dog loudly barking and baring its teeth signals aggression to the person confronting the dog. The poisonous Australian red-back spider has a bright red mark on its back, a signal of danger to someone overturning a lump of wood.

2. **Symptom:** Symptoms are natural outcomes or links to signs. They are automatically linked to one another. For example, swelling and redness of the skin indicates the possibility of having been exposed to poison ivy; or coughing and eyes stinging are symptoms of having been exposed to heavy smoke from a fire.
3. **Icon:** Icons are signs that represent a similarity between what is signified and what it is. A typical icon would be a road sign representing dangerous turns in the road about to be approached, or a right arrow with a cross through it indicating no right turn is allowed. Another typical icon is a capital *H* indicating that a hospital is nearby.
4. **Index:** Sebeok (1994) writes that the index is contiguous, or closely related to the sign that it represents. Footprints in snow are indexical markers that someone has been walking in winter.
5. **Symbol:** Symbols have a more arbitrary relationship between what they are and what they represent. They evolve through conventional use. For example, someone in a hospital may be considered a medical doctor when wearing a long white coat and stethoscope around her neck. Or, the use of fencing to symbolize, even in vast unpopulated areas, spaces that the general public is not invited to use. Symbols, however, have evolved through convention, culture, and as a part of communicative usage, and do not mean the same thing to all people. The word “organic” when used as a sign of a particular aspect of food production is a positive sign to some people while to others it is a sign of unnecessary expense.
6. **Names:** These are signs that give or create a class or grouping, such as people with disabilities, veterans, the unemployed, college graduates, Native American Indians, seniors, bacteria, and flowers. Groupings also indicate professional membership and behaviors. Lawyers study law and deal with people only on legal issues. Medical doctors treat people for health issues. Medical doctors in the

United States usually use the sign “Dr.” in front of their names, but that sign does not always indicate that someone is a medical doctor. Names of people are frequently used for their symbolic value, such as Faith or Angel.

SEMIOTIC ANALYSIS

These six sign functions allow a researcher/philosopher to analyze communicative acts in any given situation from diverse perspectives. The actual properties or conventions of a sign undergo change as society changes. In the recent past, a restaurant might have displayed a sign indicating that a public phone is available inside, but many restaurants now display signs that have the shape of a cell phone with a large X covering the image, indicating that cell phones are not permitted. As a further example, the evolution of terms and concepts dealing with disability studies are rich in semiotic interpretation. A person with disabilities could be seen as undergoing communicative and interpretive processes within a culture. Linda Rogers and Beth Swadener (2001) used applied semiotic analysis to discuss the effects of labeling (naming) people into categories such as learning disabled, or deaf, or hard of hearing. Who participates in the creation of these categories? Does the creation of these categories lead to more open systems of access and communication (Noth 1990) or do these labels create a categorical system that socially stigmatizes an individual (closed systems), making it more difficult to be known for what the person can do rather than what a person cannot do? A meta-analysis of what is considered disability in a given culture would examine how a person is assigned wholeness and is seen as being able to fully participate in social and educational events compared to those who are considered disabled and for whom facilities for social participation are not provided. Or, what physical, social, or psychological differences determine whether or not a person is considered able or disabled considering everyone differs in ability and expertise? “Is someone who is deaf going to be framed only and continually by that deafness or by their complete range and style of interactions?” (Rogers and Swadener 2001, 5) Semiotic analysis allows a researcher to investigate the referents of signs and their inherent links, as in able persons compared to people with disabilities and the cultural messages that are in-

tended and unintended (e.g., when only stairs are available for access to a sports arena), as well as how an individual or culture responds and interprets available signs.

Linda J. Rogers

APPLIED SEMIOTICS

An applied semiotic analysis means that a researcher will examine in detail the signals, symptoms, icons, indexes, symbols, and names of a particular area of study. As semiotics seeks connections that link sign to sign, it also looks at the nature of the links and meanings that humans use to make or communicate other connections. Humans make knowledge, take knowledge, and use knowledge. Applied semiotic methodology traces the semiosis of linking information to make more knowledge, or different categories of knowledge, and examines how knowledge becomes both personal and generalized to different frameworks. Donald Cunningham (1995) adapted Gilles Deleuze's rhizome metaphor to illustrate that point (see Patton 1996). A rhizome, a specialized underground plant stem, has no fixed points of connection, and its tangled roots mean that there are no hierarchies in its connection process and its structure is constantly changing. One structure could break away or be broken away from the main group and reform, making an entirely new grouping and system of connections. Similarly, therefore, using a semiotic lens to examine a particular field allows an examination of how culture interplays with human considerations.

A sign can overrepresent, or overdetermine, how a person is acknowledged. If an observer saw a man sitting in a wheelchair, the observer would automatically think that the man was unable to walk on his own. However, many even raise their voices to someone in a wheelchair as if that person also had problems with hearing. For some people, the prevailing concept of disability overrepresents the person in the wheelchair so that he or she is considered as having multiple disabilities.

John Rausch, Rhonda VanMeter, and Cheryl Lovett (2002) utilized semiotic analysis to examine the phrase "think things over" (p. 35) as it applied to the twenty-five adolescents with whom they

worked. These teenagers came from backgrounds that had been categorized as at-risk, meaning that common features of their lives included poverty, low academic achievement, and social and emotional problems. Adult social workers had further characterized these at-risk youth as making poor or unfortunate decisions, and the teenagers were judged to be impulsive, failing to consider the consequences of their actions. The teenagers were told often to "think things over" but these young people had difficulty expressing their emotions and had lived through "traumatic experiences, such as physical and/or sexual abuse" (p. 37) as well as losing people they loved. One of the reasons the teenagers were in trouble was because they had difficulty finding ways, or frameworks, to think about, or understand how to think about, their traumatic experiences. Furthermore, since the teenagers did not verbalize or put their experiences into language they could not render them into thought. These thoughts, then, were nonexistent and unavailable for the teenager to "think over."

Using semiotic analysis meant the researchers could examine how all the participants connected to the sign of the word *thought*. It was important to understand the differences in how the teenagers and the social workers perceived the referent of thought and its relationship to language as a necessary step to "thinking things over." It is a feature of semiotics that all the participants in the dynamic could examine their expectations and presumptions and reinterpret those to make other communicative links that were more helpful for all. The social workers needed to examine their ideas and sign pathways concerning how they linked thought to experience, to developmental processes, and their subsequent expectation of behavior modification.

The teenagers needed sign pathways to form communicative links between feelings, language, and experience. The researchers suggested that expressive frames, or other sign systems—painting, drawing, creating a short story, using music, or drama—be attempted so that the teenagers could find a means to translate or to communicate, to themselves and others, their deeply troubling experiences; then, those experiences could be available for reflection. The researchers were able to provide the teenagers with artistic sign systems so that they could explore their feelings.

Once the teenagers shaped their feelings into an

art form, that art form could be discussed as symbolic representation and the young people could, through the artistic sign pathways, begin to recognize signals or triggers of anger and exert control or channel their feelings more appropriately. Igor Klyukanov (2002, 27) believes that language behavior has a two-way relationship “between communicative needs and available tools.” The adolescents’ range of communication strategies grew as they were introduced to another way of representing their thinking. It was paradoxical that the social workers, who had expertise in age-appropriate strategies for teenagers and were communicating their ideas in non-complex terminology (“thinking things over”), were nevertheless asking the teenagers to do the very activity that was unavailable to them.

Using semiotics as a methodology does not simplify a field of observation. It is a communicative strategy that in effect re-complicates or brings into detail all of the processes, implications, expectations, and nuances of a situation. It is a deliberate and painstaking investigation of what is present in a communication act and who are the interpreters. Semiotic analysis in this situation highlighted paradoxes and double binds in the scenario of the social workers and the teenagers. The teenagers had “lost” people they trusted and did not have access to language structures that would help them recognize situations or feelings that initiated feelings of hostility, depression, or rejection. They had used the thought processes that were available to them and as one boy stated, “I think I can trust animals more because I can talk to animals and I know they won’t tell anybody. If they leave, or die, there is always another one that is exactly like it” (Rausch, VanMeter, and Lovett 2002, 35). The teenagers had engaged in thought processes but that semiosis, or connective processing of thinking did not bring them into control of their feelings or more communication. For them, thinking, was a sign pathway that related to adults they did not trust and who had proved emotionally dangerous to them in the past. Those sign pathways then related to communicative links that meant “telling” and telling connected to links of psychological or physical pain.

The social workers’ expertise in development meant that they had an expectation of cognitive strategies, or analytic thinking skills that typical teenagers should be able to use. According to

Piagetian theory (Piaget 1959), between the ages of eleven or twelve and beyond, the onset of adolescents engage in Formal Operational Thought, where they can think hypothetically, logically, and abstractly. By this time, adolescents have developed thinking strategies that allow them to imagine or explore situations for their outcomes and consequences. A typical teenager is able to “grasp” situations in terms of “imagined or deduced events” (p. 149). The adolescent can also explore notions of interpersonal and social possibilities.

Through deductive thought processes the teenager can reason what is appropriate behavior, what are social norms, what is wanted, and what it would mean—or what would be the probable outcome of engaging in non-socially accepted behavior. Those steps are the “thinking it over” processes that the social workers expected the adolescents to use. However, although an adolescent is capable of forming theories, the theories formed by teenagers are interdependent with experience and social interactions. For the at-risk teenagers in this study, the directive statement “thinking things over” did not have contextual value. They had practiced suppressing their experiences and their feelings about them. Their schema for thinking linked to their distrust of people and into the schema of “not telling.” The process of using semiotics analysis meant that each party in the discussion had to examine their sign referents and understand what thought meant to each interpreter in the situation as well as what links were being made by each interpreter as connective bases to other concepts.

To utilize the rhizome metaphor and the process of semiosis, there were multiple and diverse connections surrounding the sign-word, *thought*. Those schemas needed to be traced, disembedded, and decoded, and then recoded so that a general understanding of the concepts of thought and action related to the teenagers. The at-risk teenagers were enabled, through the use of artistic sign pathways, to conceptualize their feelings and begin to recognize their own signs and patterns of behavior. The social workers also had to reconceptualize their understanding of what they knew as developmentally appropriate thinking and action in terms of these particular teenagers.

Linda J. Rogers

SEMIOTICS PRINCIPLES AND HUMAN DEVELOPMENT ISSUES

Formal developmental theories (Piaget 1959; Thomas 2000) begin with sign pathways that present the process of the semiosis of human growth and development as an individual acquiring increasingly complex attainments. The infant moves into childhood, then adolescence, and finally adulthood on a hierarchical grading of development, a linear movement upward into complex thinking strategies and elaborated skill development. Although Piaget clearly states that his theories only apply to those children who experience typical development, nevertheless he believed that all children moved through sequential, hierarchical, transformational, and universal patterns. However, when actually examining the schematic world of young children, it is obvious that they are able to make cognitively complex distinctions in their thinking. For instance, almost all children at a very early age are expected to demonstrate differentiating behavior between a parent and an uncle or an aunt, between a sister and a female cousin, or between a family friend and a teacher.

Children are also required to recognize themselves as symbolic representations of a social order, e.g., “My family is Italian American,” even though their family has lived in the United States for three or more generations. Children also recognize the difference between public and private behaviors. They learn quickly that there are family patterns of behavior, such as what words parents use and what words they can use.

Children also learn what is expected on a broader social range, such as whether or not a boy or girl can cry in public and to whom they can tell secrets. A semiotic reading of childhood situates cognition (Kirshner and Whitson 1997) as a process that evolves between children, communities, available experience, social customs and practices, and even historical time periods. Alan Prout and Allison James (1997) state that rather than theorists discussing childhood as

representing a “culture of childhood” with specific tasks and organizing patterns, there are many experiences of childhood. Children are not just the representation of “biological immaturity” (p. 8). Children’s experiences will differ according to their gender, social expectations, available role models, economic status, health, and their own active involvement in the given social context they act within. A semiotic reading of the sign “child” means that a child is also understood to be an active participant, a “giver and receiver of messages” (Rastier 1997, p.5) in an evolving set of conditions that includes social practices and expectations. Semiotic readings of signs, such as child, teenager, and adult, would examine the semiosis or connections between the society and individual(s) being discussed and attempt to detail the communication schema and processes that contribute to each sign.

Using semiotics as an analytic tool is an attempt to gain an understanding of the diverse meanings held in communicative situations, and the responses that are made, intentionally or unintentionally, by message makers. Signs are part of the informal world of communicative exchange in the form of smiles and frowns or a raised voice. Signs are an essential part of every culture’s formal and deliberate organization into social order in terms of teaching the representational nature of letters and numbers, historical context, artistic representations, and scientific information. Signs also convey available role models for men and women that give information on how people are expected to interact as well as what is not socially sanctioned behavior or activities. Signs are used by everyone and everything in communicative processes. The field of semiotics and human communication examines the processes, or the semiosis, through which signs—through the process of interpretation—become understood, and the overt and covert meanings society has attached to signs, symbols, and sign systems.

Linda J. Rogers

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DEVELOPMENT OF QUANTITATIVE AND SPATIAL THINKING

The study of mathematics content and pedagogy requires an in-depth understanding of the cognitive and intellectual processes in the course of human development. Accordingly, this chapter deals with the course of an individual's most basic cognitive forms of mathematical knowledge—quantitative development and spatial development.

Research in mathematics development and cognition suggests that young children are active learners. In fact, experts in the fields of mathematics development and cognition since the mid-1990s have obtained astonishing results from numerous experiments suggesting that quantitative awareness begins at birth—even from the first days following birth. Infants show interest in the external world shortly after birth and this interest unfolds in a variety of forms into adolescence and adulthood. The concepts of magnitude and comparison are two of the earliest forms of quantitative—that is, early mathematical—thought. However, this position regarding young children's mathematical development was by no means dominant among psychologists and early childhood specialists in the past. We need only hark back to the pre-behaviorist models of learning advocated by Edward L. Thorndike (1905) and subsequently by William Kilpatrick (1951) during the first few decades of the twentieth century.

PHILOSOPHICAL-PSYCHOLOGICAL UNDERPINNINGS AND PERSPECTIVES

We can place the psychological roots of quantitative and spatial thinking and learning in perspective from two closely interrelated models. The first model (Figure 25.1) has to do with the philosophical bases of how we as human beings know not only mathematics, but also any field of study. Historians of the dis-

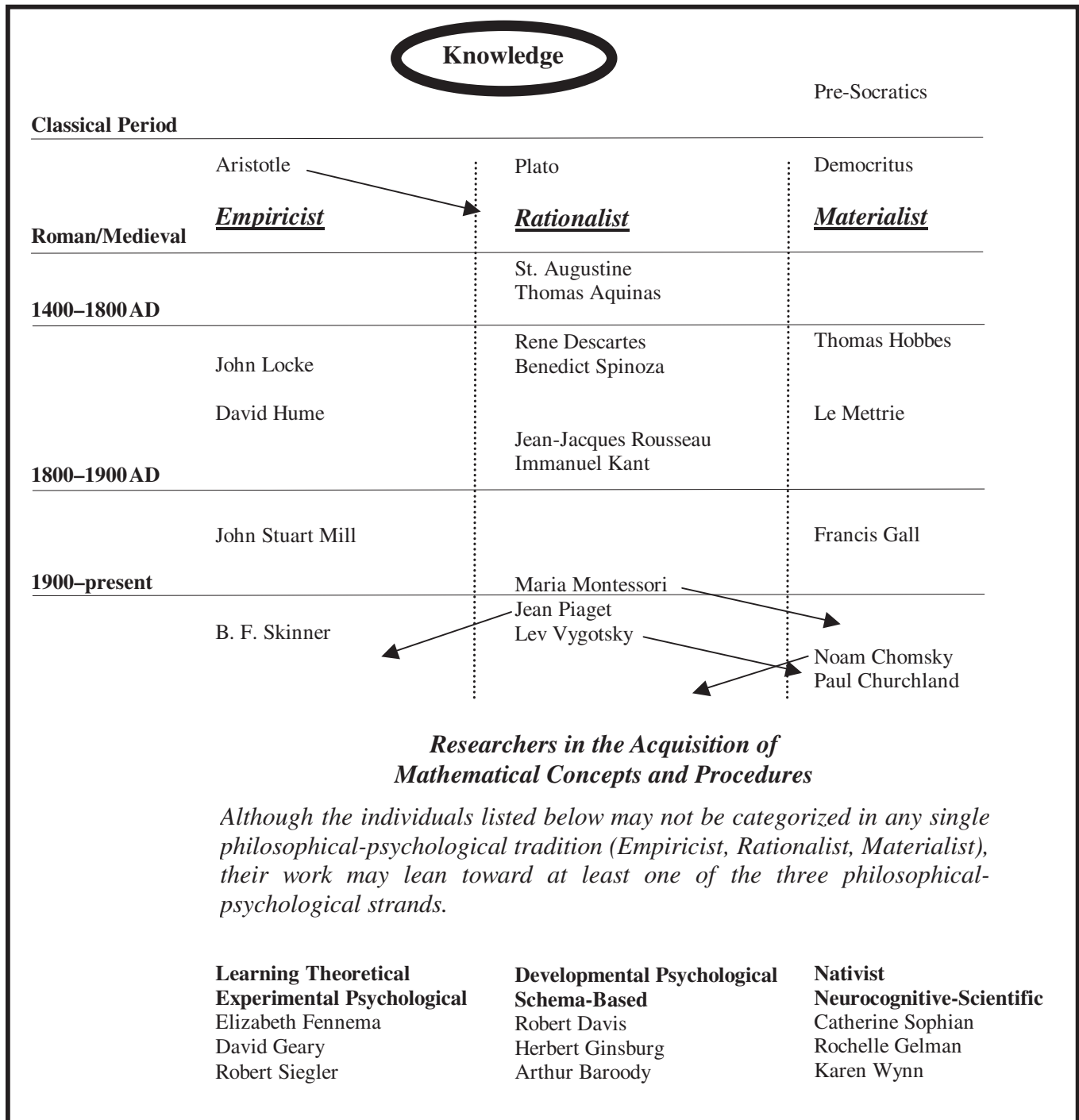
cipline of psychology have generally—and often crudely—categorized these views under the headings of empiricism, rationalism, and materialism. Since the essential question has to do with how we know anything, one can examine various perspectives of knowledge acquisition based on the philosophical underpinnings of each of these terms.

For the empiricist, the identification of knowledge acquisition is based on three significant components. The first component has to do with the idea that anything we know is an outcome of the senses (e.g., what we see or hear). The second component deals with the number of times that something occurs through the senses, that is, the probability that something takes place. The higher the probability that something occurs, and the greater the number of people who perceive that situation through the senses, the greater the validity of the existence of that occurrence—hence, knowledge of something. The third component is founded on causal properties, or the association between an external element and one's learning of something based on that element.

In another psychological perspective, knowledge acquisition deals with the individual's physiological endowments; that is, one's level of knowledge acquisition has little to do with association and everything to do with the individual's brain composition—the individual's neurological system. The materialists and nativists would most often favor this view.

In a third perspective, we find the rationalist view, which argues that if knowledge is the result of one's experiences (the empiricist view), then these experiences are founded on core, *a priori*, precepts that govern any form of experience. A number of mathematicians, mathematics educators, philosophers of mathematics, and developmental psychologists, particularly in the area of mathematical thinking and de-

Figure 25.1 **Philosophical/Psychological Bases for Mathematics Thinking and Learning**
 (Arrows indicate more than one philosophical position.)



Source: Adapted from Arthur Baroody, "The Development of Adaptive Expertise and Flexibility: The Integration of Conceptual and Procedural Knowledge." In *The Development of Arithmetic Concepts and Skills: Constructing Adaptive Expertise*, ed. Arthur Baroody and Ann Dowker. Mahwah, NJ: Lawrence Erlbaum Associates, 2003.

velopment, would favor the philosophical underpinnings of the rationalist view because their belief is that certain mathematical principles are not created, but are discovered. This view of mathematical thinking dates back at least as far as Pythagoras in the sixth century BC, and later to Descartes of the sixteenth and seventeenth centuries AD. In short, the belief that the bisection of a rectangle produces two equal right triangles, or, that the square of the length of the longest side of a right triangle is equal to the sum of the squares of the lengths of the two shorter sides is a commonly held rationalist argument in that this idea (the so-called Pythagorean Theorem) was present prior to our own existence and will be present well beyond human existence. That is, these mathematical principles have always existed apart from experience and disconnected from physiological or material components.

THE MEANING OF MATHEMATICS AND MATHEMATICAL THINKING

In addition to the significance of philosophical and psychological perspectives, definitions for the term “mathematics” abound. Individuals who espouse the “mathematics standards” movement define mathematics as “the identification and appreciation of patterns and relationships” (National Council of Teachers of Mathematics [NCTM] 2000).

The twentieth-century German-born philosopher Ludwig Wittgenstein (1967) defines “mathematics” as “a motley of techniques and proof.” Later, he says that “mathematics . . . is always measure, not [the] thing measured. . . .” That is, mathematics is not the measurement of distinct objects; rather, it is the concept of measure.

Mathematical thinking, however, cannot be defined in the same manner as mathematics because mathematical thinking is a dynamic process that spans a period of time. Mathematics, on the other hand, is a system of rules using a set of symbols (grammar or semiotic relationships) and structure and order of those symbols (syntax) that govern the process of solving both pure and practical problems.

CHAPTER COMPONENTS

Important aspects of quantitative development and spatial development—the foundational components of mathematical thinking and cognition—will be discussed

in this chapter. Discussion of these two seminal areas of study will be divided into ten entries. The first entry discusses the origins of these foundational components of mathematical thinking and cognition, in particular, the development of quantitative and spatial abilities of infants, toddlers, and preschool-aged children. The following two entries will deal with the acquaintance and familiarity with mathematical symbolism among young children and the learning of operative mechanisms of the quantitative concepts that are referred to by those symbols, respectively. In the fourth entry, spatial development is discussed in a broad context. This is followed by a general, and related, discussion on the topic of mapping and location concepts.

A general discussion follows—comparing, contrasting, and synthesizing procedural knowledge and conceptual knowledge. The seventh entry discusses mathematical process skills associated with cognitive development of mathematical thinking with an emphasis on problem solving. The eighth entry deals with mathematical errors and misunderstandings of both procedures and concepts. The following entry has to do with mathematical thinking in older children, adolescents, and young adults, and their strengths and possible misconceptions that are based on the analyses of errors discussed in the previous entry. The tenth and last entry discusses mathematical learning disabilities and the strengths and weaknesses of students who have been diagnosed with any one of these disabilities. A fairly exhaustive glossary of important terms associated with mathematics and quantitative and spatial thinking can be found at the end of the chapter. Contemporary cognitive research, primarily research based on the contributions of the Swiss psychologist Jean Piaget, as well as post-Piagetian research and its integration with neurocognitive psychology, permeates the chapter.

Daniel Ness

SPONTANEOUS/EVERYDAY MATHEMATICS AND THE DEVELOPMENT OF NUMBERS

This entry begins with a general overview of mathematical thinking from birth, and how infants con-

strue quantities. The entry then continues with definitions of spontaneous mathematics and everyday mathematics and summarizes the role of mathematical thinking during the preschool years.

A number of cognitive research scientists within the past decade have suggested that mathematical thinking begins only a few days after birth. Mathematical thinking in this case refers to evidence that demonstrates the infant's reaction to quantity, whether it be discrete numbers or amount. Research on the cognitive development of infants with regard to quantitative reasoning has been undertaken by a number of experts in the fields of cognitive psychology. The work of two individuals—namely, Rene Baillargeon and Karen Wynn—will be discussed in detail.

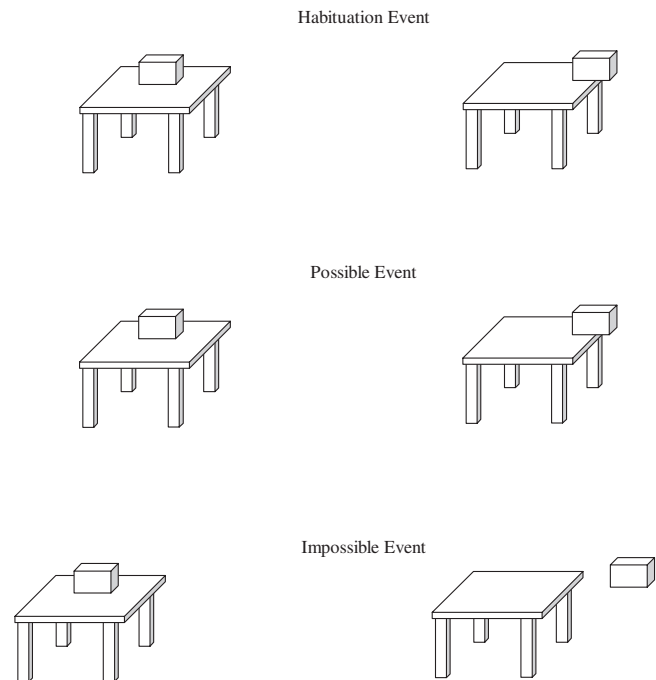
Rene Baillargeon's interest in infant cognition is broader in scope than Karen Wynn's work—the former investigating general cognitive abilities (1995) and the latter focusing on mathematical cognition (see Wynn 1998). Nevertheless, Baillargeon has conducted a number of studies to tap whether infants may have much more cognitive appreciation of the physical world and reality than Piaget would have contended, based on his writing on the sensory motor stage. One study that illustrates Baillargeon's approach is the following:

An infant is able to look at a platform that has a box on it. And there are several scenes presented. In one scene, the box is quite firmly sitting on the middle of the platform. In the next scene, the box has been moved very close to the edge of the platform. In the third scene, the box has been moved right off the platform. (see Figure 25.2)

The technique that Baillargeon and many other infant cognition specialists (like Karen Wynn with number cognition) use is a method known as inspection time (sometimes referred to in the literature as “looking time”)—the amount of time a child actually looks at something as evidence of recognition or interest.

An infant of three months old will spend very little time looking at the depiction of the box on a platform. The same infant will spend a little bit more time but not a significantly greater time looking at a box that is at the edge of that platform. The movement of a box from the center of the platform to the

Figure 25.2 **Baillargeon's Platform Task**



edge of the platform is referred to as the habituation event. Now, if you have the box off the platform, suspended in midair without any supports whatsoever, this three-month-old infant will gape at the scene. The evidence of manifest uncertainty, namely, “What is going on here?” is evident when you observe videotaped excerpts of infants who are subjected to these and similar scenarios. Any adult looking at the scenes of the box would say: “This box is suspended in thin air, and there is absolutely nothing holding it.” Baillargeon's findings suggest that the infant already has a conception of how objects in the external world are supposed to behave. When an object in the external world even as the form of a depiction violates what might be referred to as the laws of physics as understood within the experiential context of infant life, it may be necessary to reconsider when cognition in general and spatial sense in particular really begin.

Baillargeon then takes infants who are six-and-one-half months old. This is a long time in development from three to six-and-one-half months. Now the box is either in the middle of the platform, or at the edge of the platform—half on and half off, or it is a little bit more than half off the platform. This arrests the attention of the six-and-one-half-month-old because

this young child is having a “surprise” perception: “This object is very close to going off the edge.”

Research of this kind is part of a large realm of findings challenging Piaget’s stage theory: The more we learn about infants, the more we learn that they are more intelligent than we have ever thought. Individuals are able to do things at much earlier points than Piaget’s theory would suggest. It is not even quite clear whether the stage concept is the most valid concept. Different infants differ in abilities related to perception of spatial structures. Some have argued that cognitive development is a rising and falling of certain waves of ability and prowess. The story is not complete about this since the data are still not all in. But what can be said is that the more one learns about infants, the more intelligent they get.

Similarly, Wynn’s (1998) research, involved the use of a display of a small number of objects. She, too, uses a method involving infants’ inspection time as a means of tapping into infant cognitive development. The sequence of events in Wynn’s experiments adheres to the following procedure:

1. A hand is shown moving into the left side of a large open box and placing an object in the infant’s view.
2. A screen is then used to cover the box so that the object is hidden from the infant’s view.
3. The hand leaves the scene empty.
4. The hand re-enters the box with a second object. The screen is still covering the box. So, either two objects are present, or one object is present, and the second object that was considered is placed out of sight behind the screen.
5. The hand leaves the scene empty or with one object.

Two situations may occur. In the first situation, the screen drops, and two objects are revealed. In the second case, the screen drops, and only one object is revealed. Wynn’s results demonstrate that infants showed surprise and longer periods of inspection when the number of objects remaining (one object in the above case) did not match the number of items in the change that had occurred, namely, the addition of another object. So, the infant expected more than one item. In general, Wynn’s research is groundbreaking in that it was the first time a researcher found evidence showing the ability for an infant of perhaps a few days or

weeks old to be able to distinguish between one object and more than one object (Wynn 1998).

Wynn’s research has shed a great deal of light on the origins of mathematical development. However, a good deal of Wynn’s results led many cognitive specialists to conclude that quantitative ability is part of our innate endowment. In other words, Wynn takes a nativist position with respect to the origins of quantitative development. Another current view, namely that based on the research of Mix, Huttenlocher, and Levine (2002), considers the role of mathematical thinking of infants to be founded on the role of overall amount—that is, infants do not yet possess the cognitive wherewithal to distinguish between discrete numerical values (i.e., natural numbers); instead, they think in terms of amount (i.e., more versus less). This position is less nativistic in that it does not support the notion of full endowment of quantitative abilities—one’s natural tendency to identify one-to-one correspondence—from birth.

EVERYDAY MATHEMATICS/ SPONTANEOUS MATHEMATICS

Spontaneous mathematics is a term commonly associated with the development of mathematical thinking in early childhood, particularly with the everyday mathematical concepts learned before one enters formal schooling. This term is frequently used by educators and psychologists who embrace the constructivist position of learning because their position on the development of knowledge is strongly situated within the belief that learning unfolds as a result of schema (for example, sucking one’s thumb to satisfy the sucking reflex) that develop shortly after birth. This process of unfolding, then, allows children to invent new strategies for solving problems from prior situations. A large number of these problems involve quantitative and spatial thinking processes.

Other common terms that have been used by individuals in the developmental psychology and mathematics education communities in place of “spontaneous mathematics” are “informal mathematics,” “everyday mathematics,” and sometimes “practical arithmetic.” The term informal mathematics is a general term mostly associated with nonwritten mathematical activity. Everyday mathematics is often used to describe children who are engaged in both written and non-written mathematical activity outside of the

school context. Given their casual use in research and in practice, these meanings are not entirely definitive.

RELEVANT RESEARCH

The idea of spontaneous mathematics—a topic rich in both quantitative and qualitative educational research—was developed as a means of challenging the commonplace belief in popular culture that young children cannot do mathematics, and that the subject is initially encountered upon entering formal schooling. Empirical evidence suggests that mathematical thinking begins shortly after birth. In order to identify the significance of spontaneous procedures in solving mathematical problems, researchers have developed assessment techniques that are suitable for identifying such behavior. Standardized assessments are not suitable for measuring such activity because they do not allow the investigator to tap into children's thinking procedures. Instead, developmental psychologists and mathematics educators rely on observational techniques for the most part to identify children's spontaneous cognitive behavior. One of the most conducive environments for observing children in their "natural" setting is in the preschool during free-play hours. This is because children in this setting are more interested in their involvement in a play activity than wondering why a grownup is observing them.

Spontaneous mathematics occurs well beyond birth. Although the amount of time spent on mathematical activity actually increases with age, preschoolers in general are engaged in spontaneous mathematical activity nearly 50 percent of the time during free play. There seems to be an increase in spontaneous mathematical activity during free play and other informal contexts as children increase in age. At the same time, there is a lack of social class (SES) differences when considering frequency of children's spontaneous mathematical activity (Ginsburg, Pappas, and Seo 2001). Despite the apparent lack of SES difference, spontaneous mathematical activity seems to be more frequent among children of certain nationalities, for example, Chinese preschoolers (Ginsburg, Lin, Ness and Seo 2003).

SPONTANEOUS ACTIVITY INVOLVING COUNTING AND NUMBERS

As early as three years and six months of age, young children develop informal strategies for counting

objects. Since counting, a generally accepted informal mathematical activity, is considered by many in educational and cognitive research to be the basis for formal mathematical instruction, educators and psychologists have developed assessment techniques, like the clinical interview or contextualized observation, as a means of identifying young children's spontaneous strategies in determining cardinality of sets and one-to-one correspondence—two indispensable criteria for counting objects properly.

By counting objects and ideas in a one-by-one manner, children work hard at attempting to master the counting procedure. Nevertheless, their accuracy improves greatly with time. However, counting itself is only one part of spontaneous mathematical activity. The strategies for counting provide even more evidence that spontaneous mathematics occurs. The following are some of these spontaneous strategies:

1. *Pushing aside.* One important strategy that children use to develop more efficient counting using spontaneous techniques is the process of pushing aside. Children spontaneously discover a simple and elegant procedure for counting one by one. After a child counts an object, she simply moves it to the side, away from those that remain to be counted. This strategy is extremely powerful because it minimizes strain on the child's memory. At this point, it is not necessary to remember which individual objects in a random collection have and have not been counted. Having pushed to the side each object counted, the child need only remember to count all remaining items. Invention of this simple strategy results in a tremendous increase in accuracy.

2. *Tagging.* Pushing aside demonstrates a spontaneous action on the part of the child to facilitate counting in an efficient manner. However, one step above this action is the process of tagging, which does not account for the time spent pushing objects aside from the ones that are not yet counted. Instead, tagging involves making a one-to-one correspondence between a child's finger, which points to, or touches, an object of a set, and the objects themselves. This procedure allows the child to arrive at answers and conclusions about sets slightly more quickly than pushing aside alone.

3. *Subitizing.* There is an obstacle to pushing aside, however; as time progresses, children develop ways

to become more efficient in their problem solving. And this problem solving is associated with mathematical thinking. After using more primitive strategies, like pushing aside or tagging, children learn to “see” small numbers directly so that they do not need to count small collections—that is, those consisting of two, three, four, or five—to know their number. They can perceive $\blacklozenge\blacklozenge\blacklozenge\blacklozenge$ as “five,” just as they can directly convert the letter “w” into the sound “double you.” This kind of spontaneous recognition of number is called subitizing, which comes from the Italian “subito,” often found in musical notation, and means “immediate.” Children practice subitizing when they repeatedly count sets and remember the results. If a child counts to a number enough times, they learn to “see” that number without actually counting each object of the set.

4. *Grouping.* After mastery of immediate recognition of number with regard to objects, children develop grouping strategies that allow them to determine numbers in increasingly efficient ways. Often they begin by grouping objects by twos. Instead of counting one by one, a child may count “two, four, six. . . .” to yield a result. As seen in Figure 25.3, a child in the third grade might determine the number of dots in the set below by identifying five groups of three dots and an additional two dots—17 dots altogether.

5. *Arithmetic Procedures.* Older children use relatively advanced forms of arithmetic in basically the same strategy. In solving the “dot” problem above, another third grader might solve this situation by saying: “I know that five times three is 15, plus two is 17.” Indeed, this strategy is easier than counting; if developed properly, it is just as accurate. As seen from the above spontaneous strategies, children proceed from counting one by one to applying operations to groups of objects of a set.

PRACTICE OF SPONTANEOUS MATHEMATICAL ACTIVITY

Spontaneous mathematical activity need not solely be associated with numbers and the operations connected with them. This form of activity is also evident in children’s involvement with spatial and geometric activities. Two preschool children, Les and

Figure 25.3 Arrangement of Seventeen Dots



Samantha, both approximately three years six months, decide to walk over to the block area. Both children insist upon building a “big square” that they will use as a hurdle as soon as it is complete. Les and Samantha demonstrate their understanding of spontaneous geometric concepts as they are constructing their big square, using different sizes of blocks. Their big square, however, looks more like a rectangle with unequal adjacent sides than a square.

What, if any, mathematical ideas stem from this account? First, although their rendition of the big square appears more like a rectangle than a square (given that the opposite sides of their figure are equal and the adjacent sides are not), they do know that the term “square” is also associated with a four-sided figure and four right angles. A second aspect of their construction is their desire to be meticulous and precise in making certain that the big square is enclosed and resembles a four-sided figure with four right angles. In working together to construct their big square, both children used four types of blocks for their structure: the half-unit, unit, double-unit, and the quadruple-unit block. These are typical block sizes in the standard block set. Les initially places one quadruple-unit block parallel to the wall at a distance equal to approximately five unit blocks. The children do not begin to build the perpendicular sides; instead, they place another quadruple-unit block next to and parallel with the wall and also parallel with the initial quadruple-unit block.

The children then construct the left perpendicular side, using a double unit block and two unit blocks. Next, knowing that they need to close the gap, they use two half-unit blocks to do so. The right perpendicular side was the last to be constructed. At this point, they were running out of double-unit and single-unit blocks. In order to complete the “square,” Les and Samantha knew that they needed four half-

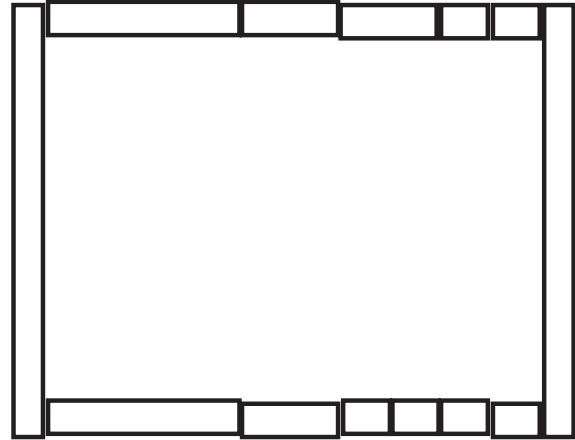
unit blocks to finish the shape (see Figure 25.4). Both children possess spontaneous strategies for producing a legitimate geometric shape. Constructivist educators would posit that this idea demonstrates the children's considerable potential for doing mathematics in school. Further, Les and Samantha's thinking goes beyond identification of shape alone; they are able to recognize shape properties as well.

GENERAL FINDINGS ON THE ORIGINS AND DEVELOPMENT OF QUANTITATIVE AND SPATIAL THINKING

In sum, there is widespread agreement in the research communities in both education and psychology that quantitative and spatial thinking occur well before the beginning of formal schooling; however, just precisely how much before is a subject of debate among many experts in the field of the development of mathematical thinking. Wynn (1998) argues that infants as young as only a few days after birth are able to recognize discrete numerical quantities, indeed a remarkable finding when it had been published in 1992. In contrast, Mix, Huttenlocher, and Levine (2002) argue that no clear empirical evidence exists that demonstrates infants' abilities to represent the exact number of discrete entities. Their research demonstrates that quantification begins with the concept of amount, and that infants can discriminate between different sets based on size, not on number.

The literature is also very clear with respect to young children's quantitative and spatial abilities. Numerous studies on young children's mathematical thinking conclude that young children, well before formal education, engage in mathematical thinking, even in the everyday environment. Educational and psychological research have demonstrated that children build ideas about quantity and ideas about space through active performance, not merely through passive viewing. They engage in a considerable amount of mathematical activity during free play; contrary to popular belief, they do not engage simply in rote, mechanical versions of mathematics that one finds in most "convenience store" mathematics workbooks. To be sure, there is a great deal of mathematical activity of several types in the everyday free play of young children of all socioeconomic backgrounds. In fact, there is no significant difference in terms of the amount of time

Figure 25.4 Les and Samantha's "Square"



children spend on mathematical activities and socioeconomic background. The data presented in these studies give all the more reason for schools and organizations to support mathematics education at the preschool and kindergarten level.

Daniel Ness

MATHEMATICAL SYMBOLISM AND QUANTITATIVE THINKING

There is a great deal of controversy with regard to when young children (post-infancy) develop an understanding of number concepts. This controversy, for the most part, was a result of Piaget's discovery that young children are unable to conserve equivalence relations—often referred to as conservation of number. A child who understands that the quantities of both of the sets appearing on the opposite page (see Figure 25.5) are equal can appreciate the irrelevance of physical arrangement, and therefore conserve equivalence relations—that is, conserve number.

The main idea here is that one's inability to conserve assumes that individual's inability to distinguish between distinct number and amount. A number of researchers have argued against Piaget's discovery positing that young children can conserve when different experimental procedures are implemented. This entry discusses how number is learned and the process in which children develop number concepts. It will be necessary for children

to distinguish between a countable set (containing a cardinal number) of objects and the physical arrangement of those objects in order to master the number concept.

HOW THE NUMBER CONCEPT IS LEARNED

Perhaps the most difficult mathematically related task for the young child is for that child to associate a mathematical symbol with a mathematical concept to which the symbol refers. That is to say, young children have a great deal of difficulty grappling with the meaning of mathematical symbols when first encountering them. A mathematical symbol is any idea—verbal or written—that represents a concept having to do with quantity or spatial relations. Children often begin their formal mathematics journey by attempting to associate the numeral—that is, the symbol whose referent is a number (e.g., the numeral “7” whose meaning is the idea or concept of seven things or objects)—to the number of objects that are represented by that numeral: “3” for three cats; “4” for four chairs; “5” for five cars, and so forth.

Learning the numbers, for example, 1 through 10 or 1 through 12, is perhaps one of the most prevalent topics of quantitative reasoning up to five or six years of age. Traditionally, the teaching and learning of number skills and concepts has been at the core of mathematics curricula in the United States, Canada, and in most countries throughout the world (Reys, Nohda, and Shimizu 1994).

Number concepts refer to the relationship between a number and other numbers in a complex system called whole numbers. Number sense refers to number concepts based on one’s intuitions and understanding of all numbers. A young child’s use of numbers manifests itself in at least four different ways: Cardinality, ordinality, by measurement, and nominally. Children demonstrate the cardinal meaning of number when they quantify a collection of objects. We say, then, that five books, five nickels, and five candlesticks belong to the same number class—“five”—because each one of these sets demonstrates a classified collection of five objects. Further, we often use numbers in an ordinal manner. That is, we might refer to the third house on the block, or the sixth parking space from the left. Next, number can be used in measurement, for example,

Figure 25.5 **Diagram of a Conservation Task**



when we say that someone is four feet tall, or a small bookcase weighs eight kilograms. Children also learn that numbers can be used nominally, that is, as labels for certain things. For example, the “2 train” does not refer to two trains, nor does it refer to the second train or even two units. Instead, it is a designation of a transportation route used as a means to differentiate one particular route from other routes.

Mathematics curricula in the early grades, particularly in the preschool and kindergarten levels, emphasize the numbers 0 through 12 for a couple of reasons. First, these numbers (with the exception of zero) clearly exist in our everyday environment. Young children see and hear these numbers on a daily basis when listening to their parents or teachers observing a clock or a watch, looking at a calendar, identifying one dozen eggs in a carton, or counting the number of inches on a ruler. Next, as research on the development of mathematical cognition indicates, each number from 0 through 12 is unique in that there is a lack of pattern based on the way each number is verbalized. When children begin to learn the counting of numbers beyond 12, they are initially acquainted with an underlying base-10 pattern (“thirteen, fourteen, fifteen, and so on). In the English language, children generally do not identify patterns in decade transition until they begin counting with the number 20. As a result, many, but certainly not all, children, especially in preschool and kindergarten, learn the sounds of the first twelve numbers and usually do not continue counting beyond the number 12. This, however, does not conclude that a child is performing below the developmentally appropriate level.

Still, much research within the past two decades has shown that children learn a great deal about numbers outside of school, without instruction or special help, and sometimes in adverse situations. In fact, recent evidence suggests that even infants are sensitive to change in numerical value.

IDENTIFICATION OF NUMBER CONCEPT KNOWLEDGE

With proper instruction, schooling can greatly influence and enhance children's knowledge of number concepts. Given a great deal of research supporting the existence of young children's everyday mathematics, adults' awareness of students' competencies and weaknesses in enumeration is a necessary component of mathematical development. The term "enumeration" refers to one's understanding of the concept of number. What, then, underlies one's ability to enumerate? That is, how do we know when a student understands number sense or the meaning of number? First, when a child counts, she or he needs to know the counting words. But knowing the counting words alone does not necessarily mean that a child understands the concept of number. Second, the child also needs to say the number words in their accurate sequence ("one, two, three, four, etc.," that is, the stable-order principle). Again, this does not demonstrate a child's mastery of number sense. Third, the child must count each member of a collection of items once and only once (i.e., one-to-one principle). Young children often count objects of a set more than once, or may "combine" two objects that are close in proximity as one item.

Fourth, the child must also recognize that the counting words do not have to be assigned to particular objects (i.e., order relevance principle). For example, if we see a row of nine checkers, whether we start counting from the left, the right, or from the middle, we still should end up with nine checkers. This may pose a major obstacle for many young children. Fifth, the child also has to learn that the physical arrangement of these objects is irrelevant to the total number of objects. Piaget's conservation of number task, mentioned above, is an illustrative example. Still, the recognition of the equivalence of two sets does not indicate one's understanding of the concept of number. Sixth, counting objects should tell us the total number of objects in a relevant collection (i.e., cardinality principle). For example, the number "5" is not the name of the fifth object or sixth one. Rather, it tells us something about the total number of objects in the set—the cardinal number. Mastery of cardinality is strong evidence that a child's conceptual knowledge of number is forming and taking shape.

Finally, the child needs to know that the last number in a sequence relates to other numbers in unique ways. That is, 5 is one more than 4, 5 is one less than 6, 10 is double 5, and so forth. This knowledge of a number in relation to other numbers in a complex system provides the definitive role of number concepts. In addition, at this point, the child understands that anything can be counted, even if the objects counted are not of the same kind (i.e., the abstraction principle).

Research in mathematics instruction suggests that teachers should represent numbers using different concrete models in the early grades so that students will be able to appreciate the different ways to represent equal quantities in the later grades. At the same time, teachers who use materials or models in a rote manner run the risk of failing to bridge the gap between students' everyday mathematical knowledge and formal mathematical concepts.

In fact, many teachers, especially in the early grades, have often likened the concepts of number and operations with the teaching and learning of mathematics in general. Nevertheless, despite this association, children's mastery of number concepts provides a strong foundation for learning more complex and challenging mathematical concepts in the later grades.

Understanding the concept of numbers 0 through 12 has an additional benefit: If developed appropriately, children will be able to sharpen their number fact knowledge—operations on numbers between 0 and 12—in the following grade levels. This is a crucial next step, which will prepare students for more challenging topics in the years ahead.

Subsequent stages of symbol development occur when young children are initially acquainted with operator symbols (+, −, ×, ÷). To date, research studies in mathematics education have not confirmed whether children's understanding of operator meanings are gradual through the learning of arithmetic operations, or whether it is a question of transition from one developmental stage to another. Nevertheless, the research is clear with respect to the level of difficulty in understanding each of the operation symbols. The "+" symbol for addition, for example, is less difficult for most young children than the "−" symbol for subtraction.

Chia-ling Lin

MATHEMATICAL OPERATIONS AND FUNCTIONS

The theme of this entry deals with the development of operative knowledge; that is, the child's informal knowledge of arithmetic operations and the presentation of formal arithmetic operations in school.

CONNECTING EVERYDAY NUMBER CONCEPTS WITH FORMAL NUMBER CONCEPTS

By six or seven years of age, children begin to greatly expand their number repertoire. Their knowledge that there are 10 fingers on both hands, most animals have 2 or 4 legs, and that there are 12 months in the year will seem obvious for many children at this age. At this point, they learn that some months have as many as 31 days, that there are 60 seconds in a minute, or perhaps they will race each other to see who could recite the number words to 100 the fastest. Although these tasks do not necessarily demonstrate mastery of number concepts to 100, students at this age seem to learn numbers based on the spoken words that represent them, or use numbers as a measurement tool.

Mathematics curriculum developers for the first grade have commonly used several benchmark numbers along the counting route to the common target number of 100. As mentioned above, some of these numbers are 10 (for ten fingers), 12 (for twelve months), 25 (as in a quarter of a dollar), 30 (for the approximate average number of days a month), 50 (as in half of 100), 60 (for the number of seconds in a minute, or the number of minutes in an hour), and possibly 75 (or, three-fourths of the way up to 100).

In the elementary school, children learn the numbers above 10 or 12 in order to achieve mastery in more complex mathematical topics learned at later points. The reason has to do with the concept of place value. The base-10 classification of our number system is one that is prevalent in most countries worldwide. Although the United States has not adopted the metric system for measurement, the base-10 classification system is practically embedded in nearly all aspects of human endeavor here and elsewhere.

RESEARCH AND EFFECTIVE PRACTICE

By the time they enter formal schooling, children are faced with a number of difficulties when dealing with mathematics. First, they will only recently be acquainted with formal terms—for example, written expression and basic operations of addition and subtraction. Also, when they begin to count above 12, they often make mistakes because they are unable to identify patterns and relationships. Some studies have argued that the English language is not always conducive to pattern detection. For example, decade transition is not consistent: after “ten”; we don't have “ten-one,” and instead, we have a unique-sounding number called “eleven.” “Twelve-two” is also unique—we call it “twelve.” Further, the “teen” numbers are spoken as if the one's come before the tens—unlike the “twenties,” “thirties,” and above, where the first spoken number is the tens digit followed by the ones digit. Children begin to notice a pattern when reaching the “twenties”—the “tens” sound comes first and the “one's” sound comes next (as in “thirty-one” and “forty-two”). When listening to students count to “100,” there is usually a pause before each decade transition (“sixty-eight, sixty-nine . . . seventy”). Students often have difficulty determining what number comes after “eighty-nine” (as opposed to the numbers coming after, say, “sixty-nine” or “seventy-nine”; this is because they hear the “eight . . . nine” sounds and therefore might follow the “eight-nine-ten” pattern and say unreal sounding numbers like “eighty-ten” (Ginsburg 1989).

Other students may have difficulty in counting by twos above twelve because they simply do not have the experience with the patterns that exist beyond that number. Only when students identify many patterns in double-digit counting will they be able to make a smooth transition into counting beyond 100. Finally, children will run into numerous difficulties in mathematics if they do not master place value. This problem can be resolved if teachers make every attempt to connect students' invented strategies and informal knowledge with the formal mathematics skills and concepts. Success in number concepts depends on children making the connections between various mathematical ideas through the identification of patterns and relationships.

ADDITION AND SUBTRACTION

There are four basic arithmetic operations—addition, subtraction, multiplication, and division. Children are often confronted with real-life problems that involve addition and subtraction of numbers, particularly the numbers 0 through 12. Prior to formal schooling, children are involved in numerous activities in which adding and subtracting single and even some double-digits are used. In the most basic case, very young children, even as early as one year old, ask for “more” of something, clearly suggesting a sense of knowledge for quantity or amount. Children become more aware and precise when dealing with situations in which they need to determine “how many” of something.

Since the early days of formal schooling, mathematics curricula in the early grades focused on early number concepts involving the addition and subtraction operations with single-digit numbers. However, over the years, teachers have carried out different approaches to teaching addition and subtraction facts. Mathematics curricula have emphasized memorization of number facts at the expense of fostering conceptual knowledge of numbers. These curricula have overlooked a great deal of the research which supports the finding that young children are capable of adding and subtracting using their own invented strategies.

On the other side of the continuum, if we examine young children’s informal mathematical activities, research suggests that they are not only involved in mathematical activities during everyday activities, but have a good deal of potential if only teachers attempt to recognize it. Further, overemphasis on memorizing number facts in a rote manner usually thwarts conceptual understanding because children’s understanding of written symbolism usually lags behind their informal arithmetic competencies. By having students explain their verbal and written work, teachers create a more conducive environment for understanding their students’ thinking processes in mathematics.

The concept of addition stems from children’s informal counting methods. Based on the examples above, two major strategies that children often use as a means of adding items in two or more sets are: “counting all” and “counting on.” When children become adept at counting objects in one set success-

fully, they then move on to count objects in two or more sets. This procedure, counting all, demonstrates young children’s mastery of the basic addition concept, namely, combining two or more sets. Children then develop more efficient strategies, that is, counting on, whereby the child identifies the total number of one set, usually the larger one, and then continues counting each member of the second, smaller set. This process can be seen as the foundation of formal addition.

Teachers’ failure to appreciate and understand mathematical development runs the risk of the inability to prevent mathematics anxiety and may provide an environment of indifference or frustration, thus producing a large student population with a possible aversion toward arithmetic and mathematics in general.

Young children’s knowledge of addition and subtraction is determined through specific questions that will allow for the identification of their strengths and weaknesses of the subject. For example, a teacher attempts to tap into what a six-year-old child is thinking and how the child thinks about a particular mathematics problem. Karen, a first grader, is asked to solve a couple of mathematical problems involving single-digit addition and subtraction. The problem asks: “Jimmy has 3 marbles and Amanda has 5 marbles. How many marbles are there altogether? Karen responded with the answer “seven” and was asked how she figured it out. Her explanation was: “I was thinking 5 and 3. There were 5. Then I moved one of the marbles (thinking in her head) from Jimmy to the 5, and it was 6. Then I moved another marble over to the 6 and it was 7” (clinical interview conducted by author, April 25, 2003).

In general, Karen was moving mental images of the marbles as she was thinking about the number of marbles there are in all. It is clear, however, that Karen invented her own strategies to solve this problem. Young children’s invented strategies for addition and subtraction are generally not grounded in the standard algorithms for these operations.

Karen is asked the following question: “Jimmy has 8 marbles and he gives 2 of them to Amanda. How many marbles does Jimmy have now?” Karen responded: “Five marbles.” When asked to explain her rationale, she answered: “I know that 5 and 2 is 8. And if Jimmy has 8 marbles, and he wants to give 2 of them to Amanda, then he must have 5 left.”

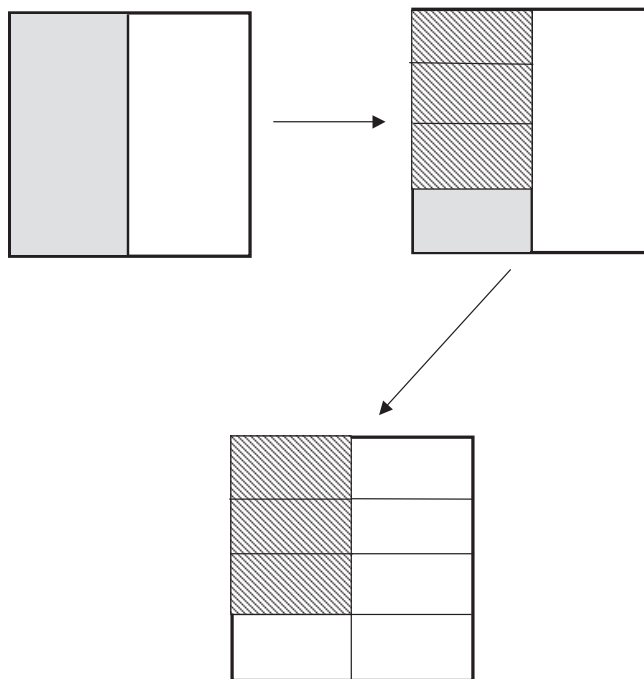
On a superficial level, Karen provided incorrect answers to the two problems. Many adults (parents, teachers, administrators, etc.) might exaggerate the situation and erroneously conclude that Karen is less mathematically able than other students her age, that she is possibly learning disabled, or that she simply lacks intelligence or an average IQ score. However, based on her rationale, one can identify logical thinking processes of a child who might otherwise be considered “less able” than her peers.

First, Karen’s thought processes were mathematically logical and precise. In the second example, when asked how she knew that “Jimmy had 5 marbles left,” Karen responded in a way that clearly revealed her understanding of subtraction as being the reverse process of addition. Furthermore, in the first example, Karen used the strategy of “counting on” to arrive at her answer. Counting on is a procedure that young children develop outside of the school context, and serves as an invaluable tool for adding two or more sets. This procedure is an extension of “counting all,” in which a child counts all the objects or images in two or more sets starting from the number “1.” Karen demonstrated her understanding of an additional mathematical concept as well; in attempting to find the answer to $3 + 5$, Karen argued that the answer would be the same as the one for $5 + 3$, hence revealing her informal understanding of commutativity in the process of addition; that is, Karen recognizes the fact that no matter how you add the two numbers, namely 5 and 3, the result is the same.

MULTIPLICATION AND DIVISION

The operation of multiplication, too, has its origins in the everyday environment of the child, that is, prior to formal education. The concept of multiplication generally unfolds as children develop strategies for counting by numbers greater than one, for example, 2, 4, 6, 8, 10, 12, and so on, or 5, 10, 15, 20, 25, 30, and so forth. Children eventually learn in their everyday activities that these sequences can also refer to several groups of the same number of objects—4 bags with 3 sandwiches in each (12 sandwiches), 5 pockets with 6 coins in each (30 coins), 3 streets with 7 houses on each (21 houses). So, the overarching concept of multiplication, initially involving the natural numbers (i.e., 1, 2, 3, etc.), is the idea of repeated addition. As in the above examples,

Figure 25.6 **Showing Fraction Multiplication through Visual Aids**



we have $3 + 3 + 3 + 3$ (four 3s), $6 + 6 + 6 + 6 + 6$ (five 6s), and $7 + 7 + 7$ (three 7s). But repeated addition is only one conceptual perspective on multiplication. Another multiplication concept is multiplication by 1, which refers to an arithmetic property, namely the identity property. A third multiplication concept is multiplication by zero, another arithmetic property in which the product will always be zero.

Yet another multiplication concept that does not adhere to repeated addition has to do with the multiplication of fractions. The conceptual meaning of multiplication by fractions is the following: What is the relationship of the first factor to the second factor with respect to the whole? For example, take the problem $\frac{3}{4} \times \frac{1}{2}$. The procedural knowledge here is straightforward: Simply multiply the numerators to obtain a new numerator and multiply the denominators to obtain the new denominator. We thus have $\frac{3}{8}$. But, what does this mean conceptually? To answer this question, examine the corresponding diagram (Figure 25.6).

Draw a diagram of the second factor in a pie chart. Shade in $\frac{3}{4}$ of the $\frac{1}{2}$ in the diagram. Now the question is: What is the fractional part of the shaded region with respect to the whole? To do this, we divide the other half into fourths. As you can see, the number

of partitions at this point is 8, and the number of shaded regions of the 8 is 3; hence $\frac{3}{8}$ of the whole pie is shaded.

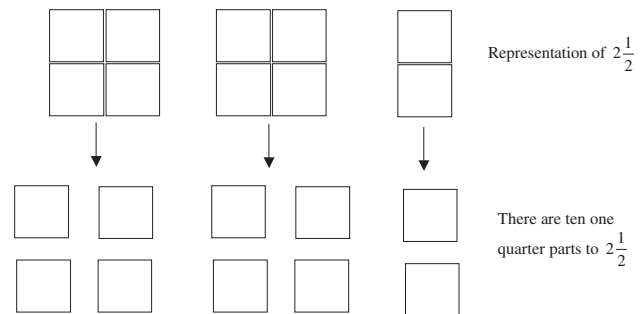
The operation of division works in a similar manner as multiplication but in reverse: Rather than repeated addition, the concept of division with natural numbers deals with repeated subtractions. For example, take the problem $18 \div 3$. Rather than asking for the total number of elements of groups with n elements in each group, in terms of division, one is asking how many groups (m) that can be made with a total number of elements when considering n elements in each group. So, in the above example, 18 is the total number of elements. If 3 of the 18 elements constitute each group, how many groups are there?

Similar to the operation of multiplication, the identity property still holds with division—namely $a \div 1 = a$. However, not so with the zero property; $\frac{0}{a} = 0$, but $\frac{a}{0}$ is undefined. We can interpret this concept as the following: Zero parts of an entity yield no pieces (or zero pieces). But we cannot take a countable number (a) of pieces of zero. This is both a physical and an abstract impossibility. Moreover, this concept can be expressed graphically through the topic of slope. A horizontal line has a slope equal to zero because there is no gradient (rise or run). A vertical line, however, does not have a slope (undefined) because rise and run do not exist.

In the intermediate elementary school grades (from grades three to five typically), students usually become adept when learning the procedure for fraction division. However, their knowledge of the concept of fraction division is lacking. Much of this has to do with the teacher's lack of knowledge with respect to this concept. Take the following example: $2\frac{1}{2} \div \frac{1}{4}$. Again, the procedure is straightforward—take the reciprocal of the divisor (the second number) and multiply the divisor by the dividend as an improper fraction. Hence, $\frac{5}{2} \times \frac{4}{1} = \frac{20}{2} = 10$. The concept, too, is straightforward. In this example, we ask: How many fourths ($\frac{1}{4}$ ths) are there in $2\frac{1}{2}$ (see Figure 25.7)? Or in general terms, how many of the divisor are there in the dividend? This is the same idea when we consider the division of whole numbers (other than zero) and integers in general.

Extensive research has shown that before entering school, young children know basic concepts like greater than, less than, and basic addition (put together), and subtraction (take away). However, upon

Figure 25.7 **Showing Fraction Division through Visual Aids**



entering school, children are required to learn mathematics formally using numerals and symbols that might be foreign to them. That is, the interpretation of mathematical symbols is entirely different from the language children are exposed to from infancy, like English, Spanish, and Chinese. The following criteria are foundational characteristics for the transition from everyday mathematics before school to formal mathematical learning in school.

First, children should have a strong conceptual base of addition and subtraction concepts before they are introduced to formal symbols and procedures and well before they learn their number facts. This will help in preventing children from thinking of addition and subtraction as meaningless operations and series of procedures that have no bearing on their everyday activity. Adults' recognition of informal knowledge will enable students to identify and appreciate the concepts and properties of each operation. For example, when teaching addition and subtraction, problems in which the students are able to identify patterns as a way of building their experiences with early formal concepts (e.g., $4 + 3 = 7$; $3 + 4 = 7$; $7 - 4 = 3$; $7 - 3 = 4$) should be utilized. These patterns should also suggest to the student that subtraction is a complement to addition and that addition is commutative.

Second, when introducing formal symbolism, teachers should be sensitive to the methods in which they organize the mathematical problems. In the example above, Karen's teacher should provide her with groups of objects like coins or small blocks so that she can verify her answer. So, if Karen had started with eight blocks and took two blocks away by pushing them aside, she would have seen that six blocks would be

left, not five. Repeated practice in this manner will help students like Karen to connect informal strategies with formal mathematical speech and symbolism.

Last, addition and subtraction curricula in the first grade should emphasize both external (formal mathematical structure) and internal factors (children's informal mathematics) in children's understanding. For example, children seem to understand the meaning of equivalence. But when confronted with the subject in school, the equals sign ($=$) takes on entirely different meanings for students.

Chia-ling Lin

THE BASE-10 SYSTEM AND PLACE VALUE

This entry has to do with the significance of the base-10 system in learning arithmetic and mathematics in general, and how the base-10 system affects student performance in arithmetic using place value when involved with calculation.

PLACE VALUE IN TERMS OF NUMBER

Several patterns emerge when children begin to count numbers higher than 12. First, they begin to notice something known as decade transition—that is, after a number with a nine, there is a new sounding number (for example, “twenty-nine, thirty; forty-nine, fifty; seventy-nine, eighty”). Second, they know that after the number “12,” each number ends in “teen” (e.g., thirteen, fourteen, fifteen). Also children can use different ways to count to 100. In other words, children do not always count by ones; they often count by twos, fives, tens, and even threes. This experience with decade transition in counting, then, provides an important switch to the formal knowledge of multiplication and place value.

Place value is perhaps one of the most challenging concepts in mathematical development learned after the concept of number. Moreover, this does not account for the different skills students need to learn, especially those involving mathematical symbolism.

Many children between five and eight have difficulty with the knowledge of place value. For example,

when asked what the number 15 means with regard to place value, many children provide the following response: “The 1 in fifteen is in the tens column and the five is the number in the ones column.” However, when asked the meaning of “tens” and the meaning of “ones,” they often do not develop a cogent explanation, let alone a correct one: “Tens is tens [pointing to the tens column] and ones is ones [pointing to the ones column].” However, when asked the meaning of the 1 in the tens column, Albert replied: “It’s 1, the number 1.” Many children reply in a similar way (Ginsburg 1989).

When using manipulatives to identify the number 15 as well as the place values for the 1 and the 5, young children do not yet understand place value symbolism. When asked to represent the 5 in the ones column, they often count five blocks accurately and push the rest of the blocks aside. But when asked to represent the 1 in the tens column, they erroneously take one block.

This development of mathematical thinking presents some important points that teachers can learn about children's initial introduction to place value. First, their understanding of numbers higher than 12 is representative of many children this age. They seem to grasp the meaning of 15 but do not connect the concept of the number 15 with the concept of place value. This exemplifies the cognitive processes of children's informal ideas of mathematics but a lack of understanding of the relationships between informal number concepts and formal, and potentially powerful, place value knowledge.

Next, teachers can be extremely helpful at this stage of mathematical development in making this connection. They could supply students with blocks or other similar objects to count. Students will need to learn that the 1 in the 15 is a symbolic representation of the number 10—hence 10 blocks. Similarly, the 5 in 15 is a symbolic representation of 5—hence 5 blocks. The key points here are: (1) manipulatives like small blocks, if used appropriately, can serve as tools in promoting mathematical understanding; and (2) using these manipulatives helps bridge the gap between children's informal and formal understanding.

Finally, the instruction of place value and number concepts to 100 merely through lecture or recitation often prevents children from learning and understanding more complex mathematics concepts. At

best, teaching without emphasizing the connection between informal and formal concepts might produce students who can perform procedurally but do not understand the topic conceptually. At worst, it produces students who will be unable to succeed in more advanced mathematical topics.

OPERATIONAL USE OF PLACE VALUE KNOWLEDGE

Based on years of research in early formal mathematics, it is highly recommended that children obtain a strong conceptual base of addition and subtraction concepts before the introduction to formal symbols and procedures and well before they learn their number facts (Baroody 2003; Ginsburg 1989). When the connection between children's informal mathematical and formal mathematical structures in addition and subtraction mathematics curricula is articulated in the first grade, teachers set the stage for the addition and subtraction of two-digit numbers in the second grade.

A solid understanding and facility in addition and subtraction number combinations will foster a powerful means by which students develop knowledge of whole number computation. Effective teaching of two-digit addition and subtraction can complement the students' understanding of single-digit addition and subtraction that they learned prior to entering the second grade. For example, when teaching double-digit addition and subtraction, successful teachers often use problems that foster students' awareness and recognition of patterns as a way of emphasizing the properties of whole number in terms of addition and subtraction (e.g., $14 + 17 = 31$; $17 + 14 = 31$; $31 - 14 = 17$; $31 - 17 = 14$). Furthermore, when combined with what they learn formally in earlier grades, children still invent strategies based on what they know informally, whether they are learning concepts from Kindergarten or more advanced concepts in the second grade or later.

In addition to its potentially powerful characteristics, the concepts of two-digit addition and two-digit subtraction are rich in terms of their historical background. Recipes called algorithms in mathematics for "+" and "-" were introduced in Europe by Arab scholars after Hindu-Arabic numerals replaced Roman numerals; before that most calculation was done using some form of an abacus. The Romans

used grooves cut in wood or stone instead of wires and pebbles instead of beads. In fact, the word "calculation" (and even the word "calculus") comes from the Latin "calculi" which means "small stones."

Modern abacuses with separate wires for units, tens, hundreds, and so on strung with bead counters are used by teachers in China, Korea, Japan, Russia, and also in the United States to teach place value and regrouping. For first and second graders, a modern teaching abacus may have more wires and beads than needed at those levels, and can cause confusion. Still, the place value, addition, subtraction and regrouping concepts are important enough to warrant the use of a classroom-made abacus with provisions for only units and tens or only units, tens, and hundreds. For this purpose the medieval English and German wooden abacus, with painted columns instead of grooves and wires and flat button-like counters, can easily be made by children using wooden shingles marked with a felt pen. Of course, paper can be used instead of a wooden shingle, but a wooden slab such as a shingle is more authentic historically.

In medieval England the wooden abacus was called a "counter," which we inherited as the location in a store where computation is done. In Germany, the wooden counter was called a "slab" or "bank"—another word still used to indicate a place of calculation. In medieval Germany, when a business failed, members of the same guild or union would seize the businessman's counter or "bank" and break it. The old German word for "break" was "rupt"—so the failed merchant was "bankrupt." If students make shingle abacuses, they can be used in calculating contests like spelling bees. In one sense, it is really more enjoyable to lose these contests than to win, since the losers get to break their shingles—they are "bankrupt"!

There are a variety of configurations for modern abacuses. In both Chinese and Japanese designs, beads are moved to the center bar to record numbers. In the Russian and American style, beads are moved from right to left—the wires or rods strung with beads indicate units, tens, hundreds, and so on, from top to bottom. Regrouping in either addition or subtraction is obvious if each column is restricted to no more than 9 beads. A button in the tens column is equivalent to ten buttons in the units column.

Like the learning of early counting and addition concepts, the concept of addition with two-digit num-

bers can be fostered through the proper use of manipulatives other than the abacus, namely, the base-10 blocks. Through the use of base-10 blocks and also while engaging in the activity “Race for a Flat,” students will be able to build their understanding and knowledge of place value and addition concepts by linking their everyday knowledge of numbers with written formal arithmetic. Students will need: (1) a tub of base-ten blocks (units, longs, and flats); (2) a pair of game dice; and (3) a place-value mat for each student. Students should engage in Race for the Flat in pairs. Give each group two dice, each pair of students within the group a supply of base-ten blocks, and each individual a place mat, which serves as an organizer for the materials. The three columns on the place mats indicate where to put each kind of block. Explain to the students that the units are placed in the unit column at the right, and that once they have 10 units, they will exchange them for one long, which they will then put in the middle column, or longs column. Ask them what they think they will do when they get ten longs. Students take turns rolling the dice. The sum of the dice tells how many units to take from the group’s base-ten supply. Students take the units they need, put them in the correct place on the place value mat, make any exchanges possible, and pass the dice to the next player. The first player to get a flat wins.

The students must make all exchanges before passing the dice and all of the other players need to watch to be sure they agree with what is being done. You may want to model a game first, perhaps you against the class. Before students begin to play, ask for questions. Sometimes students will ask what to do if they roll a ten or more. For example: “If I roll a 12, do I have to take 12 units, or can I take 1 long and 2 units?” Answer that taking a combination is fine as long as they can explain their choice to the other players. Another question might be: “Do you need to have exactly one flat, or can you go over?” For this game, allow students to go over, so that a winner must have at least one flat.

Students who are at the appropriate developmental level should try to connect the regrouping process to an algorithmic procedure for addition. After each roll, have players keep a written record of the additions and regroupings. If students apply a “traditional” algorithmic approach, then recordings may indicate regrouping with a “carry.” (See Figure 25.8)

Figure 25.8 **Example of a “Race for a Flat” Player’s Use of Addition and Place Value After each Role of a Die**

Round 1:	4	Round 2:	4 <u>+ 5</u> 9
Round 3:	9 <u>+ 2</u> 11	Round 4:	11 <u>+ 5</u> 16
	1		
Round 5:	16 <u>+ 6</u> 22	Round 6:	22 <u>+ 3</u> 25

The point to be made is that grouping can help us count and add numbers and, perhaps most important, grouping through Race for the Flat builds the concept of place value—namely, grouping by 10s. After this point, teachers should strive to have their students connect this informal procedure of base ten with formal, written arithmetic.

Assess what students know by walking around the classroom and listening to them as they play. Observe who is using shortcuts and who is counting out the units one at a time. Identify who is doing mental computation. Notice the language they use. For example, if a student has seven units and rolls a six, then how does the student handle the regrouping of ones to tens? Does the student place six units on the board and then make a group of ten units to trade for a long? Or does the student automatically reach for a long and take four units off the board? You might hear the following statements: “If Cathy rolls a six, she can get another long.” “You only need 12 more to win.” “I need four more longs to win and you only need three.” “You have more than I do. You have 64 and I only have 48.” “You have 14 more than I do.” The point to be made is that grouping can help us count and add numbers.

RESEARCH AND EFFECTIVE PRACTICE

One way to foster students’ solid understanding of subtraction with two-digit numbers and the concept of regrouping as it is related to place value is to conduct an activity called “Clear the Mat.” Like Race for a Flat, the two-digit addition counterpart, Clear

the Mat entails having students work in groups of two, and each student takes turns rolling a pair of dice. The idea is to develop and foster students' understanding of the place value concept and double-digit subtraction. Each pair of students will need: (1) a tub of base-ten blocks (units, longs, and flats); (2) a pair of game dice; and (3) two place-value mats. After students are comfortable playing Race for the Flat, introduce Clear the Mat. Ask students to place one flat, one long, and one unit on their place value mats. Then explain, "As in Race for the Flat, you will take turns rolling dice. But this time, the dice tell you how many units to remove. When you have done that, and your partner agrees you have made all possible exchanges, pass the dice to the next player. The first person to clear his or her mat wins." Explain further that they need to clear their mats with an exact roll of the dice. For example, if 7 units are left, a roll of 7 or less is good, but a roll of 8 or more is not. At any time, they may elect to roll just one die. Play at least one round with several students while the others watch, so that students can see that exchanges are necessary from the very first roll. Clear the Mat provides a good foundation for understanding the regrouping often required when doing subtraction. Students who are at the appropriate developmental level should try to connect the regrouping process to an algorithmic procedure for subtraction. After each roll, have players keep a written record of the subtractions and regroupings. If students apply a "traditional" algorithmic approach, then recordings may indicate regrouping with a "borrow." For example, see Figure 25.9.

The point to be made is that grouping can help us count and not only add, but subtract numbers, too. And perhaps most important, grouping through Clear the Mat builds the concept of place value—namely, grouping by 10s. Teachers should strive to have their students connect this informal procedure of base ten with formal, written arithmetic. As the teacher, you can identify strengths and weaknesses of various students by observing who is using shortcuts and who is counting out the units one at a time. Note who is doing mental computation, and also those students who tend to be more concrete—those who are counting by units. Notice the language they use. For example, if a student has 37 as three longs and seven units and rolls an "11," how, then, does the student handle the regrouping of tens to ones? The point to

Figure 25.9 **Subtraction through the Process of Borrowing**

Round 1: $\begin{array}{r} \\ 111 \\ - 7 \\ \hline 104 \end{array}$	Round 2: $\begin{array}{r} \\ 104 \\ - 9 \\ \hline 95 \end{array}$
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be made is that grouping can help us count and subtract numbers as well as add them. So, as teachers, our observations are very important.

The success of Asian students in mastering computation skills is due in part to the extensive use of the abacus both in and out of school. This has a great deal to do with the ways in which computation is taught. In the American system, teachers often implement the "counting all" followed by the "counting on" strategies when teaching one and two-digit addition and subtraction. For example, when children solve $19 + 4$, they often count on from 19, the larger number. In the Asian method, students are asked to think: $19 + ? = 20$. So, $19 + 1 = 20$, and $4 = 1 + 3$; therefore, $19 + 4 = 23$.

As discussed above, the base-10 system has a rich history and serves as the base for most cultures throughout the world. In addition, children generally have difficulty learning place value in the early elementary grades, and often acquire knowledge of place value after 7 or 8 years of age, and even sometimes toward the end of the elementary school years. The concept of place value is central in the learning of more advanced mathematical skills in the later school years.

Chia-ling Lin

DEVELOPMENT OF SPATIAL AND GEOMETRIC CONCEPTS

The development of spatial and geometric concepts refers to an individual's earliest cognitive perceptions of space and shape, and the learned behavior and thinking processes that unfold from these perceptions. Some important terms must be addressed before discussion of spatial and geometric development. First, geometry is the study of space. Second, space, in the context of human development, refers to one's

immediate, or local, environment and the objects within it. Spatial objects, whether real or imaginative, include points, lines, two- and three-dimensional shapes, grids, relationships between objects (e.g., congruent shapes and parallel lines), and transformations of figures. As infants, individuals perceive spatial phenomena initially. Only later do they develop ways to represent characteristics of space and geometry.

BACKGROUND AND PHILOSOPHICAL UNDERPINNINGS

Past discussion and research regarding the development of geometry and space concepts are rich in both content and context. Recorded history regarding this topic spans nearly 2,500 years to Greek (and Hellenic) times. One of the earliest discussions on the knowledge of spatial and geometric concepts can be found in one of Plato's dialogues entitled *Meno* (1937). In this dialogue, Socrates attempts to convince Meno that the young and uneducated servant nearby, through probing questions and gentle guidance by Socrates, possesses the knowledge that the area of a square is uniquely determined by the length of the diagonal drawn through it. In a sense, the boy knows the Pythagorean Theorem, though he never studied such subjects, nor did Socrates give him the answer. Socrates believed that the young boy "knew" these geometric relationships, not from experience or habituation, but solely based on universals.

Rene Descartes, the French rationalist philosopher of the early seventeenth century, argued that the concept of space is an ideal that is "given" innately to the child without prior experience (1994). George Berkeley, on the other hand (and to a great extent, the Scottish philosopher, Thomas Reid, several years later), took the empiricist stance, and argued that space is not an ideal, but a concept experienced in reality through sensation (1988). Unlike Descartes and Berkeley, Immanuel Kant, a German philosopher of the late eighteenth and early nineteenth century, felt that the concept of space is neither innate for the child, nor is it developed empirically through sensation. Instead, Kant believed that space is constructed by the child through experience and exposure to surrounding phenomena. For Kant, phenomena are based on experience; yet at the same time, he considered the form or origin of these phe-

nomena as an *a priori* structure of sensory perceptions. Space is a self-evident truth, based on pure intuition, which forms the foundation of external intuitions. Principles of geometry are an example of external intuitions, according to Kant, which can only be derived from space (1902).

Ernst Cassirer, a dedicated follower of Kantian philosophy, identified three forms of spatial experiences: organic-active or sensorimotor space, perceptual space, and abstract-symbolic-contemplative space (1957). These forms of spatial experience are characteristic of both the animal and human kingdoms. Organic-active space is the form that ranks lowest in order. According to Cassirer, it is characteristic of the animal kingdom as well as human infants, and deals with space concretely, bereft of abstraction or differentiation. Perceptual space, the next spatial form in Cassirer's hierarchical classification, has to do with the ways in which the visual, auditory, tactile, vestibular, and kinesthetic senses are used as a means of interpreting or thinking about the spatial characteristics of objects. Abstract-symbolic-contemplative space, the third and highest form, was, according to Cassirer and the psychologist Heinz Werner who followed him, the level of spatial thought that differentiated humans from animals.

PIAGET AND THE THEORY OF TOPOLOGICAL PRIMACY

Perhaps the most extensive theoretical framework on the child's conception of space to date is that of the Swiss psychologist and epistemologist Jean Piaget. Piaget and his associate Bärbel Inhelder (1956) advanced a general theory of spatial and geometrical development—in particular, the theoretical underpinnings of the topological primacy thesis. Piaget's clinically and empirically based theory of the child's conception of space developed out of the tradition of the epistemological problems that philosophers like Descartes, Berkeley, Rousseau, Kant, and Cassirer faced when dealing with the fundamental concepts of space.

According to Piaget's theory, spatial thinking begins in infancy. From approximately the end of the first month of life, the infant begins to construct perceptual space, which refers to an individual's direct contact with an object or group of objects and their surroundings. Unlike older children and adults, in-

Infants are unable to conceive of objects as having a “life” of their own. Infants, then, are unable to consider objects beyond their immediate perception. Like representational space, which comes much later, perceptual space is not acquired passively; individuals develop perceptual space from experience and active engagement with objects or other individuals in their environment or immediate surroundings. These experiences, Piaget and Inhelder (1956) claim, begin with the infant’s use of reflexes, and the subsequent development of primary circular reactions in the second stage of the sensorimotor period. The first and second stages in the sensorimotor period form the first of three periods in the development of perceptual space. It is in this first period that infants develop five elementary spatial relations: proximity, separation, order, enclosure, and continuity. In terms of the period of topological primacy (birth through age seven), Piaget designates the period from birth through two years and six months as Stage 0 because the young child overwhelmingly exhibits evidence of perceptual space in which objects, whose permanence is unstable, appear as fleeting, ephemeral images; there is little or no evidence of representational space in this earliest stage.

Continuing through the stages of spatial and geometric development, Piaget distinguishes between two substages of Stage I. Substage IA describes a child whose age is between two years six months and three years six months. Whereas children in Substage IA find it difficult to differentiate between different shapes, Substage IB children, ages three years six months to five years, are able to differentiate between shapes topologically, and not in Euclidean form. Like the previous stage, Stage II is divided into two substages. According to Piaget, although children between Substages IB and IIA demonstrate a crude recognition between rectilinear shapes (e.g., squares and rectangles) and curvilinear ones (e.g., circles and ellipses), they are unable to differentiate between the shapes themselves. This transitory period occurs between the ages of four years and four years six months. In the heart of Substage IIA—ages four years six months to five years—children seem able to differentiate between shape by angle and sometimes dimension. In Substage IIB, which usually commences at five years and ends at five years six months, children progress to the level of differentiating between similar shapes. Stage III, which begins at approxi-

mately six years six months of age, is the final stage in the “topological primacy” period. By stage III, children are able to synthesize and organize complex forms of shapes without hesitation. According to Piaget, Stage III of this period forms the beginning of the transition from topological thinking to projective thinking.

In short, although Piaget argued that “perceptual space” is constructed as early as infancy, it is only much later that children develop ideas regarding space as it relates to Euclidean geometry. This is what Piaget called “representational space.” Further, Piaget argued that children’s understanding about shapes does not come from passive learning. Instead, children develop knowledge of space and geometric concepts as a result of active engagement in different activities. Children do not learn about geometric shapes through recall or rote learning (Piaget and Inhelder 1956).

CURRENT PERSPECTIVES ON SPACE AND GEOMETRY IN THE FIELD OF PSYCHOLOGY

Many psychologists often refer to the term “space” as having two meanings: actual space, or space that can be “seen” in the sense of usable space; and abstract, mathematical space, or, the space created from an individual’s mental constructs. Other psychologists have expanded on this definition. George Armitage Miller (1998) distinguishes between two types of space: perceptual space and conceptual space. Perceptual space deals with the mental schemas associated with an individual’s senses—visual, auditory, olfactory, and tactile—and concerns our everyday manipulation of objects and all of our movements. In contrast, conceptual space deals with our understanding of the existence of spatial phenomena beyond our senses. The individual knows that on the other side of a wall there are familiar objects that cannot be seen or touched. Conceptual space is interpreted through particular representations, such as maps, pictures, or even ideas or mental constructions that may not necessarily be translated into symbolic form.

In his book *Perception*, Julian Hochberg (1964) demonstrates how perception, through visual stimuli, develops in terms of an individual’s spatial and geometric cognitive level. For Hochberg, the perception of shape

is more than merely observed shapes that an individual has experienced or learned. Instead, he argues that a shape is simply “the sum of the sensations of points of color and shade at a particular set of positions” (p. 58). This position seems to run counter to developmental theory, which suggests that the development of spatial perception and shape is based on recognition of shape due to prior experience. Hochberg also examined the meaning of two-dimensional pictures and their relationship to shape. His argument is as follows: The perception of objects that exist in the real world does not necessarily derive from one’s perception of their three-dimensional form. At the same time, depth cues, which are pictorial pieces of information about depth, are not necessary for one’s recognition of three-dimensional objects in two-dimensional pictures. The idea of depth cues, then, is not a critical factor when one perceives objects either as pictures or as real-world phenomena. As an example, a child does not need any pictorial training for recognizing any two-dimensional representation of an object or shape. Hochberg’s position seems to support the notion that shape recognition or identification is not a learned phenomenon, but one merely related to sensation of points of color and shade as well as its positioning. Again, this view seems to counter the Piagetian topological primacy thesis, which maintains that humans, who construct perceptual space as early as infancy through direct contact with objects, develop meanings of shape and size through experience and learning.

Psychologists have also proposed the distinction between psychological space and physical space. They argue that for the psychologist and physiologist, psychological space is the subject of interest while, for the physicist, physical space is the subject of interest. Psychological space is defined as any space that is attributed to the mind and which would not exist if the mind did not exist. In contrast, physical space is any space attributed to the external world independent of the existence of minds. Other psychologists argue that the distinction between physical and psychological space should be made with caution: On the one hand, physical space is important for psychologists who believe that an individual’s psychological space is learned directly from physical space; yet, at the same time, physical space cannot be learned or measured independent of one’s mental construction of it.

Spatial and geometric development has played a crucial role in developmental psychology research.

One important research topic involves the role of searching for missing or hidden objects as it relates to early childhood spatial development. Theories of search, perhaps stemming from the Piagetian notion of object permanence and the six elementary spatial relations (mentioned above), involve a variety of aspects of space, such as location, shapes of objects, and direction. Research in this area also demonstrates that search is a universal characteristic among all people and all ages; all cultures possess and manipulate objects, and all individuals are faced with situations in which needed objects may not be in sight or are not readily available. Finally, psychologists whose works are devoted to this area believe that search, as it relates to spatial representation, sheds light upon other areas of cognition—namely, the development of memory, intuition and logic, and the role of planning.

Piaget’s contributions to research concerning the child’s conception of space, as well as those who have replicated his work, have had a far-reaching impact on current research in this area. However, this research does not examine the development of young children’s conceptions of space and geometry in the everyday context. Recent studies in this have concluded that young children engage in proto-geometric activities—behaviors in which the investigator identifies the bridge between advanced spatial and fundamental Euclidean thinking—for nearly 33 percent of the time during free play (Ginsburg, Lin, Ness, Seo 2003; Ness 2001).

EFFECTIVE PRACTICE IN MATHEMATICS EDUCATION

It has become evident that researchers on spatial and geometric development have drawn a great deal from Piagetian theory. Pierre van Hiele (1986) and Pierre and Dina van Hiele (1953) proposed a hierarchy of five levels of spatial-geometric development in which each level is chronological (one does not skip levels) but not dependent on age (individuals who are several years apart in age may belong to the same level). The geometric knowledge of individuals classified under the first level (Level 0) is based on their perceptions of objects (e.g., a door is a rectangle because it looks like one). Second level (Level 1) individuals, however, can distinguish between what they see and their understanding that a rectangle can

be classified as a four-sided figure. Third level (Level 2) individuals not only can classify rectangles as four-sided figures, but also understand that the properties inherent in a rectangle are different from those in a circle or a triangle. Fourth level (Level 3) individuals appreciate the relationships between properties of figures (i.e., Euclidean proof), while fifth level (Level 4) individuals study the relationships between various geometric systems (e.g., Euclidean versus Lobachevskyan geometric systems).

Douglas Clements and Michael Battista (1992) have researched extensively on the areas of space and geometry from a mathematics education perspective. Both Clements and Battista have examined the research in the development of spatial and geometric reasoning in the early years and students' understanding of the subject throughout elementary and secondary school. Further, much of their earlier work has examined computer software packages and programs like Logo™ and their benefits to children's geometric thinking skills. They have also proposed the concept of spatial structuring, which deals with the ways in which children manipulate mental schema as a means of solving problems in geometry.

Researchers of spatial-geometric cognition propose that successful understanding of concepts in Euclidean geometry is dependent on strong process skills, in particular, the ability to identify and justify relationships, and not simply memorize definitions. Educational goals with regard to the study of geometry for the early grades focus on analytical thinking skills which prepare students with the ability to compare and contrast geometric relationships and prove theorems that are related to these relationships.

Daniel Ness

DEVELOPMENT OF MAPPING CONCEPTS

Maps are graphic representations of space, shape, and location. Mapping concepts refer to an individual's level or ability to represent objects (material or abstract) of space in his or her own environment. Some of these concepts include scale, perspective, direction, linking the written represen-

tation with its referent (for example, a roadmap of a town with the actual streets of that town), and the coordinate system.

The subjects of maps and mapping have gained a great deal of importance in education, especially within the last two decades, mainly for two reasons. First, we know much more now that mapping concepts are intrinsically linked to the development of children's thinking and cognitive structures. Second, since mapping concepts are developmental and are based on experience and learning, psychologists and educators believe that a strong content knowledge of mapping will help children learn concepts in geography—a subject only recently implemented in a number of state curricula (due to federal legislation published in *Goals 2000: Educate America Act*, Public Law 103–227). First and foremost, however, the routes of cognition regarding mapping concepts can be traced to early stages of mathematical development, particularly the origin and growth of spatial thinking.

MAPPING AND ITS ORIGINS IN DEVELOPMENTAL AND COGNITIVE RESEARCH

Like concepts of number, knowledge of maps stems from infancy and early childhood and emanates from an infant's or young child's experience with objects in space. James Blaut and David Stea's results indicate that children as young as three years of age are capable of producing maps when given miniature trees, houses, and cars (1974). It has been difficult, however, to identify the specific techniques and strategies young children use when demonstrating their abilities in mapping and navigation. Others have argued that although young children are capable of having some knowledge about maps, they will make mistakes if maps lack specific landmarks or cognitive indicators like the trees, houses, and cars mentioned in Blaut and Stea's example.

Research on spatial cognition also has addressed issues relating to young children's understanding of maps and their local environments as well. In agreement with Blaut and Stea, Liben and Downs (2001) have concluded that, for the most part, young preschool children have a minimal understanding of the general representational nature of maps and

that a basic representational form of experience and knowledge is established by three years of age. Older preschool children are able to learn the relative distances between markers once they are familiarized with certain paths. Many older preschoolers may possess the ability to measure scaled routes as soon as they are familiar with them. Children between the ages of four and seven, like older children, adolescents, and adults, are able to learn from consulting maps. For example, children who consult maps in order to learn a route through a six-room house learn the route more quickly than those who use navigation (that is, searching by walking or traveling) alone. Younger children, on the other hand, have a great deal of difficulty extrapolating information from a map to determine where they need to go relative to their initial position.

A number of mathematics educators, like Douglas Clements (1999), argue that the ability of orienting one's self—that is, knowledge or understanding of mental or physical maps—is essential in improving spatial abilities and developing geometric concepts. However, children who process mathematical information visually or graphically do not necessarily perform better in geometric or geographic skills than those who process this information through verbal-logical means.

DIRECTION AND LOCATION

To date, we seem to know a good deal about children's acquisition of notions concerning direction or location. Children acquire knowledge of the front-back-side concept by age five; however, exactly how and when children acquire each of these concepts is not entirely conclusive. S. Kuczaj and M. Maratsos (1975) found that children seem to encounter the notions of "front" and "back" as opposites before they actually learn the meaning of each term. Children learn the meanings of these terms when they first apply each word to themselves before associating "front" and "back" to other objects. Further, they maintain that the notion of "side" appears last. Children's (and adults') notion of front is the most prominent side of almost all objects and living things. Certain characteristics of objects tend to represent notions of front: with moving objects, front is generally associated with the part of the object or being that is at the most forward point, such as the

head of a dog, or the headlights of a car; for stationary objects, front generally concerns the parts of the objects that are manipulated in some way, like the door of a refrigerator. Characteristics of "back" include the tails of animals, trunks of cars, and the like. The main point is that children generally do not learn the concepts of front and back in any particular order—they are learned simultaneously for the most part.

Despite what is known regarding children's understanding of "front" and "back," children's mastery of environmental directions, such as "above," "over," and "behind," navigational concepts, such as "left" and "right," or global directions, like "north," "east," "south," and "west" as well as scale and measurement have been shown to improve children's development of map reading.

One of the more advanced concepts related to mapping concerns the coordinate system. Students in the upper elementary grades have difficulty in mastering the coordinate systems because they lack experience working with two-dimensional systems. Students in the upper elementary and middle school levels might be able to strengthen these skills by familiarizing themselves with grid lines, points, and distance relationships between points.

MAPPING AND GEOGRAPHY EDUCATION

Since a rapidly growing body of studies supports the finding that cognition of maps and mappings occurs in the early preschool years, psychologists and educators have emphasized the importance of a strong geography education curriculum. Their eagerness to establish and promulgate a geography curriculum stems from a number of reports from the 1980s, offshoots of the infamous "A Nation At Risk" report of 1983, which allude to an unsatisfactory state of students' geographic knowledge. For example, one study reported that only 20 percent of U.S. students were able to locate the United States on a world map and even fewer knew how to identify the location of the U.S. capital (Liben and Downs 2001).

Nearly all researchers on mapping and geography will attest that geography is not merely a mundane set of facts and figures—that is, rote memorization of names of countries and their capitals, names of rivers, lakes, and other bodies of

water, or identification of the highest peaks and the lowest points on earth. Rather, geography refers to the spatial characteristics of human existence that allow individuals to make important decisions about their environment with respect to maximizing efficiency for better living conditions (for example, ideal locations for the construction of schools, supermarkets, and the roads between them). Researchers have also noted that the unrelenting lack of geographic knowledge of most Americans has produced numerous social problems and imprudent decisions. Some of these problems include: the improper locations of waste sites without due consideration of environmental implications regarding the hazards associated with pollution; unnecessary urban sprawl, which may result in makeshift infrastructures of residential, commercial, and industrial structures; or making political decisions based on a poor understanding of a particular country's topographical environment and how the inhabitants use it.

Daniel Ness

PROCEDURAL KNOWLEDGE VERSUS CONCEPTUAL KNOWLEDGE

The question concerning the effectiveness of procedural knowledge over conceptual knowledge or vice versa in mathematical learning has been a main theme for debate among mathematics education and psychology researchers for several decades. The cognitive processes which determine one's method of solving problems and answering questions can be identified within the knowledge continuum, whereby procedural knowledge may account for one extreme, and conceptual knowledge may account for the other extreme in the continuum. By knowledge continuum, one refers to the way in which an individual goes about knowing anything. The important term here is "goes about," which can be interpreted as "how" one knows anything. In mathematical terms, we can add the sum of two sets using written symbolism in a highly efficient manner—that is, in a quick and accurate procedure. For example, without the use of a (non-human) calculator or computer, an individual

Figure 25.10 **Double and Single Digit Addition Problem Solved Procedurally**

$$\begin{array}{r} 1 \\ 27 \\ + 5 \\ \hline 32 \end{array}$$

can calculate the above problem (Figure 25.10) procedurally rather quickly.

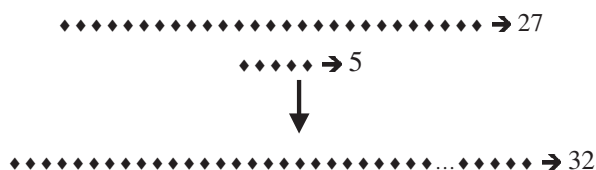
The idea behind solving the $27 + 5$ problem in the above example is that we are unable to determine on face value whether the individual knows the meaning behind the "1" placed above the "2" of the 27, but we do know that the individual solved the problem correctly and efficiently, without demonstrating the conceptual underpinnings of the problem. The individual used the standard algorithm for addition with place value. A standard algorithm for any mathematical domain (a mathematical domain is defined here as any mathematical idea, for example, ideas of number, addition, subtraction, multiplication, division, the Pythagorean Theorem, statistical mean, integration, and so forth) is a method for solving a mathematical problem that has been commonly accepted in society for decades, centuries, or even longer (society is defined here as in the school, the university, the workplace, or at home).

When referring to the previous discussion, it was noted that the procedural method for solving $27 + 5$ is not useful for determining one's knowledge of the concept behind addition with place value. We can identify an individual's knowledge of the concept of addition with place value, or any other mathematical domain, through a more conceptualized method of solving mathematical problems. Figure 25.11 illustrates the method of solving $27 + 5$ through conceptual knowledge.

This method is conceptual because we can count all the members of each set; more specifically, all the diamonds of each set (27 in one set and 5 in the other) to arrive at the sum, namely, 32. This method summons the generalizable concept of addition—the combining of two (or more) sets to obtain a single sum. The early method of adding—counting all, which leads to counting on (and which can be interpreted as inefficient and time consuming, nevertheless accurate)—is demonstrated in solving a problem with a conceptualized approach.

Figure 25.11 **Double and Single Digit Addition Problem Solved Conceptually**

$$27+5=32$$



The topics of procedural knowledge and conceptual knowledge are discussed separately, and are followed by a discussion on how research in the area of procedural and conceptual knowledge affects practice.

PROCEDURAL KNOWLEDGE

One of the most recognized publications on the subject of procedural knowledge and conceptual knowledge is a landmark book, *Conceptual and Procedural Knowledge: The Case of Mathematics*, edited by James Hiebert (1986). In their introductory chapter, “Conceptual and Procedural Knowledge in Mathematics: An Introductory Analysis,” Hiebert and Patricia Lefevre define the terms “procedural knowledge” and “conceptual knowledge” in quite broad terms. Hiebert and Lefevre argue that the definition of procedural knowledge consists of two parts. The first part deals with mathematical symbolism in terms of the ways in which we represent mathematical terms for the purpose of making sense for solving a problem. They contend that one part of the definition of procedural knowledge “is composed of the formal language, or symbol representation system, of mathematics. The other part consists of the algorithms, or rules, for completing mathematical tasks. . . . It includes a familiarity with the symbols used to represent mathematical ideas and an awareness of the syntactic rules for writing symbols in an acceptable form . . .” To illustrate the formal component of procedural knowledge, one can identify the syntactical accuracy of the multiplication problem: $17 \times 4 = 68$. In the same manner, one does not write “ $17 \boxed{4} \times = 68$ ” because it is syntactically incorrect.

The second part of the definition of procedural knowledge has to do with its algorithmic composi-

tion, that is, the set of rules or procedures used to solve various mathematical problems. For example, there is a very specific and systematic method in which to solve the problem $17 + 5 = \square$. We add the 7 and the 5 to yield a 12; but instead of writing the 12, we write “2.” We then carry the “1,” which stands for “10,” and add it to the “1,” which also stands for a “10,” in the tens column, thereby yielding 20. The answer, 22, is the outcome of an algorithm—a structured and efficient method for solving a mathematical problem.

CONCEPTUAL KNOWLEDGE

Conceptual knowledge is much different from strict procedural knowledge in that it is not concerned with syntactical nomenclature, nor is it entirely concerned with algorithmic sequencing. In contrast, conceptual knowledge deals with the relationships between different elements of knowledge. (Although, one exception to this has to do with the relational element to the algorithmic part of procedural knowledge—namely, that x precedes $x + 1$.) This definition can clearly be traced to literature in cognitive psychology, which states that for one to understand a concept, one will first need to gain insight into factual knowledge. Only then will it be possible for one to make connections between factual content and create meaningful concepts. Conceptual knowledge, then, according to Hiebert and Lefevre, “is characterized most clearly as knowledge that is rich in relationships . . . and can be thought of as a connected web of knowledge, a network in which the linking relationships are as prominent as the discrete pieces of information.” Conceptual knowledge can be attained, for example, when a child has memorized the standard algorithm for addition, and connected it with her knowledge of the numbers in the ones place, tens place, and so on. This connection, or network of individual concepts, is what makes conceptual knowledge a compelling form of cognitive development and growth.

RESEARCH AFFECTING PRACTICE

In the examples shown in Figure 25.12, we can identify the meaning of the process of multiplication by examining the problem: 23×4 . The first example is strictly procedural, demonstrating the problem solved through the standard algorithm for multiplication.

Recall that a standard algorithm can be defined as “a commonly accepted procedure,” and has been developed over a period of time—often several centuries or even millennia—and is generally the most efficient method of solving in a particular domain (the domain being multiplication in this case). The second example of the same problem is solved in a highly conceptualized form; clearly, the process of repeated addition—the conceptual definition of whole number multiplication (with the exception of 0 and 1)—is evident here. In the third example, we show the same problem being solved, yet in an entirely different manner from the previous two. In a sense, the third example can be interpreted as a combined form of procedural multiplication and conceptual multiplication. As seen in Figure 25.12, the third example exemplifies what Baroody (2003) would refer to as the investigative approach.

For several years, the gap between procedural knowledge and conceptual knowledge has remained wide. Only recently have researchers identified how a proper combination of both types of knowledge benefit genuine mathematical understanding. Baroody identified four approaches to mathematical instruction, which range in a continuum from entirely authoritarian to entirely democratic in teaching style. They are: (1) the skills approach; (2) the conceptual approach; (3) the investigative approach; and (4) the problem-solving approach.

The Skills Approach

The skills approach is a highly dualistic model—that is, doing mathematics is the production of either right or wrong answers; there is no gray, that is, no answer “in between.” In addition, only one procedure will yield a correct answer. The teacher exerts absolute authority on the students and is the sole judge of correct and incorrect answers. The goal for instruction is for students to master basic skills in a more or less rote, mechanical manner through the use of mnemonic devices and other memorization strategies. The focus of the skills approach is to emphasize procedural knowledge. The general progression of the skills approach model is bottom-up—basic skills are mastered first, followed by more complex skills later. The general classroom environment is one in which the teacher directs all components of student learning. The lecture method is implemented on almost every occa-

Figure 25.12 **Double and Single Digit Multiplication Using: Example (1) the Standard Algorithm; Example (2) the Repeated Addition Concept; and Example (3) a Procedure Showing Partial Products**

Example 1

$$\begin{array}{r} 1 \\ 23 \\ \times 4 \\ \hline 92 \end{array}$$

Example 2

$$\begin{array}{r} 23 \\ 23 \\ 23 \\ + 23 \\ \hline 92 \end{array}$$

Example 3

$$\begin{array}{r} 23 \\ \times 4 \\ \hline 12 \quad 10 + 2 \\ + 80 \quad 80 + 0 \\ \hline 92 \quad 90 + 2 \end{array}$$

sion and students generally work in isolation. Textbooks and worksheets are very common tools for teaching and learning, and manipulatives are almost never used. This approach was quite common throughout the history of formal schooling and even common to the present day. Its advocates were educational theorists and researchers who espoused behaviorist psychological research in educational practice.

The Conceptual Approach

The conceptual approach is a pluralistic model in that its proponents emphasize a continuum between right and wrong. There are usually several procedures to obtaining correct answers; however, there is usually one “best” procedure. Although the teacher has full authority over teaching and learning, there is an acceptance of diverse ways to solve basic and more complex problems. The teacher takes a somewhat authoritarian position; instruction is direct or semi-direct—that is, there is some imposition on the part of the teacher. The goal of the conceptual approach is to foster a meaningful environment for students as they learn facts, rules, and procedures. The focus of instruction under this approach emphasizes both procedural and conceptual content. Instruction is sequential and is based

on the cognitive developmental level of students. Like the skills approach, the conceptual approach is didactic, however, not to such a great extreme. Textbooks are used, but teachers emphasize models for student learning as a means of explaining procedures and concepts. Oftentimes, manipulatives are used under this approach.

Investigative Approach

Baroody (2003) refers to the investigative approach as being instrumental in that it fosters an environment in which there are many procedures for obtaining correct answers or solutions. Teachers generally are open to a variety of viewpoints as long as they are effective. Incorrect responses often involve the teacher asking appropriate questions to tap into the student's understanding. This environment is democratic for the most part in that it is student centered. The goals of this approach are not only to provide meaning to skills and concepts, but also contribute to positive disposition (e.g., motivation and confidence), mathematical reasoning, and problem solving. The investigative approach differs from the previous two methods of instruction in that the teacher serves more as a guide. The teacher recognizes the students' informal knowledge and attempts to link students' inventive strategies with formal strategies. In addition, this approach is top-down in that the teacher poses a problem to promote student inquiry and investigation. Students have the opportunity to work in groups and on their own, and the use of manipulatives and technology plays an important role in learning.

Problem-Solving Approach

Baroody (2003) refers to the problem-solving approach as extreme relativism in that there is no right or wrong answer; rather all answers and solutions are equally valid because each student has his or her own viewpoint of what is true and logical. This approach differs greatly from the previous three instructional methods, especially the skills and conceptual approaches. The teacher and students evaluate their own answers and solutions based on their own belief systems. The teaching style is entirely democratic and student centered, and the main goal of the method is to promote mathematical inquiry. Thus, the focus of the problem-solving ap-

proach is to foster the processes of mathematical inquiry. Students are generally engaged independently in activities and the teacher generally participates as a monitor of activities and moderator of discussion. Activities are often open ended and the teacher makes little use of textbooks.

CHOOSING THE BEST APPROACH

With little research to support the "best" approach to teaching mathematics, Baroody (2003) espouses the investigative approach because it is the method that centers on conceptual knowledge, even more so than the conceptual approach. The investigative approach, more than the other three, promotes fluency of skills, conceptual understanding through appropriate probing methods, and even encourages a strong disposition toward mathematics.

Daniel Ness

PROCESS SKILLS ASSOCIATED WITH QUANTITATIVE AND SPATIAL THINKING

Although the National Council of Teachers of Mathematics (NCTM) lists only five process skills—problem solving, communicating mathematical ideas, reasoning and proof, connecting mathematical ideas, and representing mathematical ideas in a variety of ways—as standards (or what they categorize as "theme standards"), the number of processes associated with mathematical thinking abound. One can certainly add to this list of processes: estimating, conjecturing, analyzing, measuring—the list continues. Before the common process skills are discussed, however, it is necessary to gain insight into how and why these process skills are significant in the development of mathematical thinking.

PHILOSOPHICAL UNDERPINNINGS OF MATHEMATICAL PROCESS SKILLS

Mathematical process skills are crucial for cognitive development because they emanate from our senses. In the empirical tradition of how we come

to know anything, if everything we know we can base on sensory perceptions, then any insight we gain with regard to mathematical thinking would be a product of the senses—our visual stimuli, for example, would allow us to proceed to solve mathematical problems, to reason or prove a theorem or to represent mathematical problems in several ways, while our auditory stimuli cause us to listen to others as they communicate their ideas or make mathematical conjectures. This is a perspective firmly rooted, as stated above, in the empiricist tradition, particularly in the works of Locke, and subsequently in the work of Hume.

PROBLEM SOLVING AND THE VARIETY OF MATHEMATICAL REPRESENTATIONS

Students' accuracy in solving mathematical problems in early and middle twentieth-century American education was not based on the identification of common or efficient problem-solving strategies. In fact, it was Edward L. Thorndike (1905), the Teachers College professor of psychology, who posited that transfer of mathematical ideas was negligible at best and nonexistent at worst, and that mathematical learning was an outcome of the association between external stimuli and an intended response. With this philosophical view, mathematical problem solving strategies basically took a back seat for several decades.

Problem-solving strategies and the promotion of estimation were proscribed by educators, whose emphases were rather on number fact and procedural memorization for the general school aged population. It was not until the 1980s when the standards movements in a number of academic fields were generally in place, and subsequently placed greater emphasis on a somewhat pseudo-constructivist framework for teaching subject matter knowledge. Prior to the 1980s, there was a sentiment among educational administrators and politicians that students were generally performing poorly, or underachieving, in the common branch subject areas. Much of this sentiment was a result of a number of factors, including one seemingly ignored by many educational scholars—increased access to education. Another critical factor had to do

with the role of teaching mathematics and science in the public schools.

From the late 1950s, after the Soviet Union's launching of Sputnik, to the end of the 1970s, American schooling adopted what is commonly referred to as the "new math." The new math curriculum, which included both the mathematics fields and the science-related fields (especially physics), included topics that tended to focus on students who were interested in higher-level mathematics and physics. Common mathematical topics in the elementary school included set theory, the study of number bases other than ten, and modular arithmetic. Instead of finding ways to promote the then established mathematics and science curricula, many conservative politicians within the Reagan administration condemned the new math curricula because, as they claimed, it was contributing to an increase in an underachieving student population. Critics have argued that these politicians were more interested, in a sense, in "dumbing down" the school-aged populace. As a possible repercussion to the somewhat fatalistic tone of the infamous right-wing publication, *A Nation at Risk*, in 1983, the education community decided to focus on key elements that promoted successful teaching and learning. One of these key elements had to do with the manner in which students solved mathematical problems. These elements were identified, and eventually led to the development of the standards movement, which exists in full form to the present day.

Despite the standards movements in recent days, research in problem-solving methods and strategies—known as heuristics—are far from novel enterprises. In fact, the topic of heuristics was burgeoning during the years of World War II, and was fully developed in George Pòlya's book entitled *How to Solve It* (1945). Shortly after Pòlya wrote his book, it was clear to most mathematicians that his heuristic methods were sound, and if followed correctly, would yield successful results when solving mathematical problems. However, Pòlya was not without his critics, especially in the 1960s and 1970s. Although Pòlya's methods were transparent to most mathematicians, a number of critics argued that research supporting his heuristic approach was lacking, and that there were hardly any data to support his problem-solving techniques, especially with regard to mathematics education. Pòlya's heuristic framework, however, had

received a great deal of acceptance throughout the mathematics and education research community by the 1980s (incidentally, during the growth of the standards movement). By this time, researchers had collected several studies, including doctoral dissertations, on the topic of heuristical approaches in mathematics, and concluded that Pòlya's methods were successful in fostering achievement in mathematical problem solving.

Unfortunately, Pòlya's program for developing heuristical strategies was not entirely achieved in the contemporary classroom or in school curricula. Despite his popularity in this domain, Pòlya's problem-solving framework was oversimplified. First, the process of successful problem solving will involve individual students or small groups of students developing specific strategies based on the heuristics. Teachers generally follow what Burkhardt calls the "exposition, examples, exercises" mode, in which students are introduced to a new topic, work out examples with the teacher, and work on exercises at the end of the lesson or for homework. The content of each heuristic is taught—it is not presented for students' active engagement when working on problems.

Another dilemma produced by the way problem-solving strategies are carried out in the contemporary classroom has to do with the status of heuristic teaching in school. The heuristic is usually considered a separate activity, disconnected from so-called mainstream parts of mathematics textbooks. They are usually presented more as novelties, or "rewards and recreations" toward the end of each chapter. To follow Pòlya's program, teachers need to ensure that heuristic methods play a role in every aspect of mathematics learning.

COMMUNICATION THROUGH CONJECTURE AND REASONING AND PROOF

Like mathematical problem solving, the ability to communicate mathematical ideas was also generally proscribed in American schools in the early and middle parts of the twentieth century. Students were asked to memorize their number fact tables and operational procedures individually, oftentimes without the aid of an adult. Within the last decade,

however, the role of communication in the mathematics classroom has become the *sine qua non* process-skill activity because it is believed to promote transfer of mathematical learning and both procedural and conceptual knowledge. Moreover, the increase in use of the Piagetian clinical method as being a successful means of tapping students' understanding of mathematical (and other) concepts, and the greater use of general psychoanalytical techniques as analogues to the classroom environment for promoting connections between one mode of thinking to other modes have greatly contributed to the role of communicating mathematical ideas in the classroom.

Another area in which mathematical communication has become a major element in mathematics learning is metacognition—the ability for an individual to interpret, and possibly analyze, her own thinking process. The identification of metacognitive ability can also be demonstrated through the Piagetian clinical method. Metacognition occurs in a social milieu—that is, a setting with more than one person—for if this were not the case, than it would be difficult to identify an individual who is engaged in metacognitive activity, and it would be futile to talk through one's thinking processes in an environment lacking other individuals. As Lester and his colleagues point out, metacognitive instruction is most efficient and valuable when it is practiced in a systematically controlled and structured situation under the direct guidance of the teacher.

THE INTERRELATIONSHIP OF MATHEMATICAL IDEAS

As stated above, with the psychological findings of Edward Thorndike, American educators at the turn of the twentieth century were not convinced that mathematical concepts involved transfer, and that one mathematical concept was distinct from any other mathematical concept. For example, it would be peculiar in the 1920s for a teacher to present a topic in Euclidean geometry by including material having to do with number operations and algebraic concepts. Teachers using current methods, however, inculcate these types of connections for the development of mathematical thinking; for example, it would be quite common nowadays to observe a lesson demonstrating the bisection of a rectangle to

prove that two triangles are congruent (geometric thinking), and, at the same time, demonstrating congruence by presenting the equal proportions (arithmetic and algebraic thinking) of the corresponding legs of each triangle. Recent research studies have demonstrated otherwise—namely, that students’ knowledge transfer involves a great many mathematical ideas.

ESTIMATING

NCTM did not include estimating as a process skill within their set of standards. This may very well have to do with the role of estimation in problem solving. This may have something to do with the fact that there was little, if any, research in mathematics education before 1980 on the topic of estimation in mathematical teaching and learning. During that time, and even today, teachers have downplayed the role of estimation. Perhaps this is due to the use of the term as a euphemism for “obtaining a close answer, but not the correct one.” However, estimating is a powerful tool, which enables students to identify and appreciate mathematical patterns and relationships.

Estimation is powerful in a number of ways. First, it allows students to detect patterns and relationships with numbers. For example, if a student knows that $10 \times 6 = 60$, when she encounters the problem 102×59 , the process of estimation will allow her to identify an answer that is quite close to the correct answer, namely, 6,000, without actually performing the problem on paper. Second, estimating abilities are helpful in tackling more complex forms of mathematics. And third, good estimation skills often lead to better performance in mathematical abilities; students who possess these skills use more strategies and appear to be more flexible in their thinking than other students.

It must be clarified, however, that estimation is not synonymous with the term “approximation.” An individual might approximate a measurement or the answer to a problem without performing an estimation task. For example, an estimate of the number $\frac{5}{17}$ to the nearest thousandth might be 0.301 since $\frac{5}{17}$ is slightly less than $\frac{1}{3}$. But to approximate $\frac{5}{17}$ to the closest thousandth would require the use of pencil and paper or a calculator. In short, estimation is cognitively based while approximation is procedurally based (through the process of using algorithms). And finally, to estimate is not to guess. Estimating is not an arbi-

trary endeavor; when one estimates, he is not picking an answer arbitrarily out of a hat. Rather, there is a general organization to the thinking process with regard to the identification of patterns and relationships.

GRAPHING AND THE VARIETY OF MATHEMATICAL REPRESENTATIONS

NCTM includes “mathematical representations” as one of their so-called theme standards. There is a great deal of controversy with regard to the benefits (or the lack thereof) of one’s use of a variety of representations of a mathematical idea or procedure for the purpose of gaining knowledge. On the one hand, educators espousing one constructivist perspective would argue that having more than one method to solve a problem, or the use of a number of mathematical representations for problem solving, allows for greater versatility in using mathematical symbols and ideas, and therefore builds knowledge and understanding. On the other hand, a number of educational researchers and psychologists have argued that children who use too many methods for solving a mathematical problem tend to use inefficient strategies and usually have slower processing speeds and limited long-term memory. These students are often diagnosed as mathematically disabled learners. Moreover, there is a rather high positive correlation between mathematically disabled individuals and overall learning disabled individuals. Despite this chasm, there is a general belief that any mathematical topic can be represented in more than a single way.

Chia-ling Lin

MATHEMATICAL ERROR ANALYSIS

Mathematical error analysis is one means by which teachers or psychologists can assess the developmental level of mathematical knowledge of a student. Rather than identifying the correct versus incorrect responses on most standardized criterion-referenced tests (e.g., Test of Early Mathematical Ability [TEMA], Test of Mathematical Ability [TOMA], Comprehensive Mathematics Abilities Test [CMAT]), mathematical error analysts identify the mistakes that

occur—the common ones—among students. The intention of most error analysts is to demonstrate that a student's errors in computation are frequently consistent. Errors become predictable when they can be decoded to explain exactly why and under what circumstances an incorrect response was produced.

SOURCES OF ERRORS

There are three important factors to consider when encountering individuals who make consistent mathematical errors when attempting to solve problems. First, many students identify arithmetic and algebra merely as activities which are isolated from their everyday concerns. Thus, they think of these areas of study, and mathematics as a whole, as a topic with its own set of rules, completely unrelated to the general routine of their lives.

Second, errors that children make are more often than not based on organized strategies and rules. Many educational administrators and politicians base children's errors on a number of factors that have little if anything to do with the reasons behind those errors. In an earlier entry, a six-year-old child was asked to give the answer to $5 + 3$. Her response was "7," and she based her answer on a logical argument—if $7 - 3 = 5$, then $5 + 3 = 7$. In short, the child produced a sound, logical argument to an otherwise erroneous response. Unfortunately, many teachers, administrators, and politicians would think of these errors in terms of "low IQ" or the diagnosis of a learning disability.

And third, there may be very sensible origins to the faulty rules that underlie students' errors. Children do not produce consistent errors because they lack intelligence; rather, these errors are almost always the products of what children have been taught or what they have observed. This problem can certainly be compounded if a teacher is not entirely clear about how to teach certain mathematical topics. From an objective standpoint, the faulty rules children use may seem illogical; however, through analysis, it has been seen that most errors have sensible origins that make some sense to the child.

MATHEMATICAL BUGS

Given the sensible nature of most errors we can classify mathematical errors into two primary categories: Math-

Figure 25.13 **Mathematical Bug Produced When Ignoring Place Value with Double and Single Digit Subtraction**

21	12	34
- 4	- 7	- 28
23	15	14

ematical bugs and mathematical slips. The origin of the term "bug" goes back to the early days of computer programming, when computers filled the space of entire laboratories and programs were produced using punch cards. The term "bug" was applied to a faulty program, or a program that failed to produce output due to faulty logic or incorrect terminology.

The term "bug" was also appropriated for individuals who produced mathematical errors in a consistent manner. For example, consider the pattern of errors in the above three problems (Figure 25.13).

The analysis of this error pattern with respect to these three problems is clear: The individual's faulty rule clearly has sensible origins—namely, that when subtracting whole numbers, the smaller number is always subtracted from the larger number. In the first problem, the "1" is subtracted from the "4" to produce "3," and the "2" is either "brought down," or an assumed "0" in the tens place of the subtrahend (bottom number) is subtracted from the "2" in the minuend to yield "2," hence, the incorrect answer of 23. The second problem is produced in a similar manner, namely, $7 - 2 = 5$ and $1 - 0 = 1$. The third problem is quite similar with only one minor change: Although the larger number, "8" in the ones place, is in the subtrahend, the larger number in the tens place is in the minuend. Nevertheless, the same faulty rule is applied, thus producing the incorrect answer of 14. The student's answers to these three problems constitute what Brian Enright (1986) and other error analysts refer to as an error pattern, and which has been referred to as a mathematical "bug."

ERROR CLUSTERS AND PATTERNS

Researchers in mathematical error analysis measure mathematical errors in numerous ways. Based on his *Diagnostic Inventory of Basic Arithmetic Skills* (1986), Enright identified 233 error patterns in students' mathematical performance. Each of these patterns is grouped into seven error clusters. These

clusters into which all of the error patterns appear fit into one of the following seven categories: regrouping, process substitution, omission, direction, placement, attention to sign, and guessing. Regrouping demonstrates a student's inability to solve an arithmetic problem due to a lack of place value knowledge. Process substitution is evident when a student changes the method of one or more of the computational steps when attempting to solve a problem. The student will create an entirely different algorithm that results in an incorrect answer. Next, an error cluster in which a student leaves out a step in an algorithm or leaves out part of an answer is called omission. An omission error differs from a process substitution error in that an incomplete algorithm is used, not a different one. The error cluster of direction is produced when the steps are performed in the wrong direction or order even if the computation is correct. Placement errors are often calculated accurately, but the answers are incorrect because the numbers are written in the wrong place. The attention to sign error cluster occurs when a student ignores the sign, and thus performs the incorrect operation. Guessing, the last error cluster in Enright's framework, is perhaps the only one of the seven that does not seem to be derived from faulty rules that have sensible origins. Guessing lacks logical coherence, and indicates a lack of knowledge of both content and process. Figure 25.14 shows examples of each error cluster.

This cluster method can be useful in at least two ways. First, the examiner can establish whether the student is making the same error in different skill assessments. This may suggest a basic weakness in a fundamental arithmetic process. For example, if on several skill tests a student demonstrates a number of error patterns that fall within a particular error cluster such as process substitution, the examiner can assume that the student needs remedial instruction in those areas.

Second, error analysis information for each skill test can be recorded, thereby providing data for setting individual instructional objectives and can be used during school conferences as a graphic record of the student's current performance in arithmetic. By reviewing the data sheet, the examiner can determine quickly and easily if there are students who can be grouped for instruction. The 233 error patterns in seven error clusters indicate that there are numerous ways to produce errors in mathematical compu-

tation. The error pattern given in Example 1 of Figure 25.14 involves regrouping because the individual failed to demonstrate knowledge of place value when subtracting. Therefore, proper instruction fixed upon an essential process that will be applied again and again can greatly reduce the repetition of student errors in computation.

ERROR ANALYSIS VERSUS CRITERION-REFERENCED TEST RESULTS

There are numerous differences between the identification of errors through mathematical error analysis and the results from criterion-referenced tests. First, as mentioned above, criterion-referenced tests are devised so that administrators can determine the developmental level of a student's mathematical knowledge based on the number of correct and incorrect responses. Mathematical error analysts, in contrast, are concerned primarily with the consistency of mathematical errors and, perhaps more important, the structure of these errors. Another important difference between the two has to do with the nature of the content that is being assessed. On the one hand, error analysts wish to understand how errors are produced from the standpoint of calculation and computation, and not from the standpoint of conceptual knowledge. On the other hand, researchers who use criterion-referenced tests use these tests because many questions identify whether a student recognizes the correct response to a question that is conceptually based.

MATHEMATICAL SLIPS

Mathematical bugs consist of only a single type of mathematical error. Another mathematical error type is referred to as a slip. It is often the case that individuals make errors due to sloppiness, carelessness, or a lack of attention to mathematical detail. These distinct behaviors are called slips. For example, a child may consistently obtain the correct answer to the problem $16 - 9 = \square$. However, on one particular occasion, the same child may erroneously conclude that $16 - 9 = 8$. Another individual might be quite adept in multicolumn multiplication, but for some reason, makes an error with the problem 16×21 . Instead of obtaining 336 as an answer, the student overlooks the additional 10 that was carried over (from 2×6) to the tens column, thus obtaining the

Figure 25.14 Examples of Error Clusters in Mathematical Computation

1. Error Pattern from the “Regrouping” Cluster

$$\begin{array}{r} 5 \quad 7 \\ + 1 \quad 5 \\ \hline 6 \quad 12 \end{array}$$

The student writes the entire sum of each column with no indication of regrouping.

2. Error Pattern from the “Process Substitution” Cluster

$$\begin{array}{r} 3 \quad 4 \\ - \quad 5 \\ \hline 8 \quad 9 \end{array}$$

The student adds the subtrahend to each digit of the minuend and also does not regroup with regard to place value.

3. Error Pattern from the “Omission” Cluster

$$\begin{array}{r} 1 \quad 7 \\ 0.4 \overline{) 6 \quad 8} \end{array}$$

The student ignores the decimal point in the divisor.

4. Error Pattern from the “Direction” Cluster

$$\begin{array}{r} 2 \quad 3 \\ \times \quad 2 \\ \hline 6 \quad 4 \end{array}$$

The student multiplies the tens place of the multiplicand before multiplying the ones place of the multiplicand.

5. Error Pattern from the “Placement” Cluster

$$\begin{array}{r} 2 \quad 7 \\ - 1 \quad 5 \\ \hline 2 \quad 1 \end{array}$$

The student writes the digits of the difference in reverse.

6. Error Pattern from the “Attention to Sign” Cluster

$$\begin{array}{r} 6 \\ - \otimes 5 \\ \hline 1 \quad 1 \end{array}$$

The student adds the two numbers when multiplication should be utilized instead.

7. Error Pattern from the “Guessing” Cluster

$$\frac{4}{12} = 4$$

The student copies the numerator and designates it as the answer.

Source: Adapted from Brian E. Enright, *Tester Manual for Enright Diagnostic Inventory of Basic Arithmetic Skills* (with 10 books, student tests, and arithmetic record book). North Billerica, MA: Curriculum Associates, 1986.

incorrect answer of 236. Unlike bugs, slips are not systematic and are often associated with boredom, lack of effort, or attempting to process a calculation too quickly. Slips are much closer to randomness than are bugs. In terms of frequency, Kurt Van Lehn (1986) found that slips occur almost as frequently as systematic errors or bugs—that is, approximately 50 percent of all mathematical errors are slips. All remaining (approximately 50 percent) errors have systematic origins.

Daniel Ness

MATHEMATICAL THINKING AMONG OLDER CHILDREN AND ADOLESCENTS

The mathematical thinking strategies of older children and adolescents are founded and dependent on the mathematical development of infants, toddlers, and young children. From a Piagetian perspective, children commonly considered in the intermediate grade level (approximately seven to eleven years) can perform numerous mathematical tasks that would be otherwise untenable for the preschool aged child. Piaget referred to these children as concrete operational in that they were able to appreciate the relational nature of equivalence of two or more sets (conservation of number), classify shapes according to their properties, place straws of varying lengths in the proper order of size, and explain how they would solve a three-digit multiplication problem with a fairly clear description.

Children at the level of concrete operations are then able to demonstrate more organizational skills than children in previous levels. When comparing classroom investigations of early elementary school children, intermediate children, and adolescents, concrete students were asked to conduct an empirical activity where they were initially asked to predict what would happen if a tennis ball were to be dropped from the top of a meter stick. Some children concluded that they believed the tennis ball would reach one meter after the first bounce, while others believed the ball would reach half a meter after the first bounce. There were even a few other students who were unable to make predictions altogether.

They were then given meter sticks and tennis balls, and were asked to carry out their investigations. Their task at this point was to work in groups: One member of each group would hold the meter stick vertically, while another member would drop the tennis ball from a meter above the floor, while another student would measure the approximation of the distance between the tennis ball and the floor after the first bounce. Children at the preoperational level (kindergarten and first grade) generally had no idea how to proceed with the directions of the activity. The child in charge of the meter stick would typically hold it in a slight slant, the child dropping the tennis ball would add downward force to the ball (thereby adding an additional, and unnecessary, variable to the activity), while the child measuring the distance of the ball from the floor after the first bounce would not react quickly enough to approximate the measurement. Children at the concrete operations stage would be far more organized than the younger children. The child with the meter stick would hold it upright and perpendicular to the floor, the child dropping the ball would be careful in the way she dropped the ball, making certain that no extra force is applied and that it drops vertically (without a curve), while the third child takes rather accurate measurements. At this point, however, they did not know completely how to proceed. They did not know how to apply the approximated measure of the distance of the tennis ball to the floor after the initial bounce to any type of generalization with regard to patterns and relationships with measurement concepts. So, although their actions demonstrated careful and systematic treatment of the task at hand, their range of ability to generalize was limited.

Adolescents or young adults (approximately twelve years and older) are at the level of formal operations. Unlike the younger children, the adolescents were not only systematic and careful in their calculations, they also considered the general idea of the investigation in terms of all possibilities. After making several measurements of the first bounce after a tennis ball dropped from one meter, some students made similar kinds of predictions by dropping the ball at a new constant height. Others decided to drop the tennis ball at the same height, but now they wanted to drop the ball on a gymnasium mat to confirm their original hypotheses. In general, the older children and adolescents did not only hold the variables constant; they contin-

ued their investigations by changing some of the variables and then holding the new variables constant. That is, they tested their hypotheses by appreciating the relationships between variables and realizing that if any one variable is changed, the same conditions of the other variables must apply. In sum, formal operational individuals are able to generalize at a much higher level than preoperational or concrete operational individuals. These findings have significant implications for mathematics educators in terms of older children, adolescents, and adults and the processing and solving of mathematical problems.

PROBLEM SOLVING AMONG ADOLESCENTS AND ADULTS

Research examining mathematical acquisition and retrieval of basic number operations and more complex problems has demonstrated mixed results in terms of how adults process mathematical problems when compared to younger children. One classic study on adult mathematical thinking is that of M. Ashcraft and J. Battaglia (1978) who proposed that older children and adults retrieve answers to rather simple problems (e.g., $6 + 7$; 2×5) from memory, which then activate associative links between answers and binary (two numbers being acted upon through an operation) combinations.

Subsequent research in this area, then, has suggested that older adolescents and adults differ considerably on problem-solving techniques in that younger children employ a variety of techniques—both formal and informal—while the adult resorts solely to memory which then is transferred to a link between number combination and an answer. For example, the child of seven years will often solve the problems 23×4 using a number of procedures. Some of these procedures include: $23 + 23 + 23 + 23$ (repeated addition); $20 \times 4 + 3 \times 4$ (place value concept); the standard algorithm (see glossary); or simply counting all members of each set.

For the past two decades or so, research has suggested that the adult processes this problem in a different and singular manner, namely through memory: (1) the adult memorizes the answer to the number combination 23×4 , or (2) performs the easier calculation through memory using the standard algorithm for multiplication. In short, the general

development of arithmetic knowledge from childhood to adulthood went something like this: Young children use numerous strategies when solving mathematical problems. Over time, they learn more efficient methods and eventually dispense with the inefficient ones. They use flexible and adaptive methods acquired from a variety of procedures. Later, however, adults will use a single and “most efficient” method for solving various mathematical problems. In fact, most research on adult mathematical thinking up to the late 1990s has espoused this view.

CURRENT RESEARCH ON ADOLESCENT AND ADULT MATHEMATICAL THINKING

Research within the past five years presents a quite different picture with regard to adolescent and adult mathematical processing of procedures. Jo-Anne LeFevre and her colleagues (2003) provide evidence demonstrating that adults, like children, have multiple procedures from which to select when solving mathematical problems. In addition, it has been shown that adults do not solely rely on memory of combinations as has been put forth by earlier research. The following are some examples which illustrate similarity between children’s and adults’ cognitive processing when solving mathematical problems and carrying out less complex calculations.

First, adults’ processing speed, like that of children’s, is faster when working with ties—binary combinations in which the numbers being operated upon are the same (e.g., $5 + 5$, 7×7)—than when working with non-ties—binary combinations in which the numbers being operated upon are different (e.g., $2 + 9$, 6×3)—on both addition and multiplication combinations. Second, adults, like children, find it easier to solve problems with operands that involve the numbers 2 or 5 (e.g., 2×6 , 2×7 , 5×3 , 5×4) than those that do not (e.g., 3×6 , 4×7). One reason for this may have to do with the divisibility of 10; that is, our society, like most societies, works with base 10 in the everyday goings on of school, work, play, and so forth. Since the number 10 is divisible by 2 and 5, the faculties of the brain find it easier to work with these numbers than other numbers that do not divide the number 10 evenly—that is, into equal parts (e.g., 2 divides 10 into 5 equal parts; likewise, 5 divides 10 into 2 equal parts). In

other words, the base 10 system can be parsed more easily with the numbers 2, 5, and of course 10, than other numbers.

In sum, adolescents' and adults' processing of arithmetic problems differs from children's processing perhaps only with regard to speed. With processing speed aside, however, there are few if any differences at all in terms of the use of single procedures or multiple procedures when comparing children's and adults' problem-solving methods. In fact, data suggest that adults use a greater variety of mathematical procedures than was originally posited by earlier researchers in the field of mathematical cognition and processing speed.

Chia-ling Lin

MATHEMATICALLY RELATED LEARNING DISORDERS

Difficulty with mathematics covers a wide range of conditions. These conditions, however, may have little to do with neurological deficit—that is, mathematically related learning disabilities due to physical deficiencies—and may have a great deal to do with affect (for example, problems with anxiety when encountering mathematical problems) or cognitive deficit (for example, difficulty with fact retrieval, conceptual insight, memory, and processing speed). Since learning problems related to affect are not characterized as disorders, discussion here focuses on neuropsychological deficits and cognitive deficits in mathematical thinking and problem solving.

NEUROPSYCHOLOGICAL DEFICIT

While cognitive deficit refers to procedural and fact-retrieval skills, conceptual knowledge, working memory, and processing speed, individuals experiencing neuropsychological deficit have suffered from either developmental or acquired physical conditions. Neuropsychological research has accounted for three types of conditions that affect arithmetic-related learning: (1) distinct fact retrieval; (2) procedural fact-retrieval; and (3) disruption of the ability to spatially represent

numerical information. Despite some overlap with cognitive deficiencies, individuals who lack distinct fact retrieval are unable to produce solutions to factual arithmetic questions. For example, an individual who experiences deficiencies in distinct fact retrieval will be unable to identify the larger set when examining two sets—one with three dots and the other with seven dots. Individuals who lack procedural fact retrieval are unable to provide correct or accurate responses to relatively simple operations, for example, the sum of 5 and 3, or the difference between 9 and 8. Individuals who experience a disruption of the ability to spatially represent numerical information are unable to identify the meanings of mathematical symbols based on their spatial representation. For example, they will undoubtedly lack knowledge with regard to the convention of aligning decimal points when adding numerals containing decimal parts. Another example would be when individuals attempt to subtract one number from another with an arbitrary positioning of numerals. These three conditions are extremely common with individuals who possess a number of acquired or developmental neurological learning problems with regard to mathematics. Individuals who experience these and other related conditions may have the following neurological learning disorders in mathematics.

THE DYSCALCULIAS

The most common neurological condition related to mathematics learning is the disorder referred to as dyscalculia. This disorder is often diagnosed in two forms: acquired dyscalculia and developmental dyscalculia. Individuals with acquired dyscalculia experience problems associated with numbers, specifically arithmetic computation and calculation, that result from some form of brain injury, while individuals diagnosed with developmental dyscalculia experience problems in conceptual knowledge of number or arithmetic learning that are a result of a sequence of neurological events originating from early childhood. These individuals do not necessarily suffer from some form of overt brain injury, although evidence suggests that a neuropsychological deficit (e.g., lack of synaptic growth) underlies the mathematically related learning problems. According to a classic study of acquired forms of dyscalculia,

H. Hecaen and his colleagues (1961) classified acquired and developmental dyscalculia into three types: alexia and agraphia for numbers, spatial acalculia, and anarithmetria.

Alexia and Agraphia

Alexia (repetitive reversal of numeric symbols) and agraphia (the inability to read and write mathematical terms correctly) for numbers involve difficulties in the reading and writing of numbers, however, with adequate and intact skills in other areas of arithmetic. Alexia and agraphia for numbers are sometimes, but not always, associated with reading and writing in nonmathematical language-related disorders. Symptoms of alexia and agraphia often appear in young children—it is quite common to observe preschool-aged children who reverse numerals when writing them; however, reversal of numerals should not be an indicator of a neurological disorder in mathematics learning of an individual, especially during early childhood. Alexia and agraphia for numbers will be a problem, however, only if it persists well into the elementary school level (over seven or eight years of age). Lesions in the left hemisphere of the brain are the cause of alexia and agraphia of numbers.

Spatial Acalculia

Spatial acalculia refers to one's inability to reason mathematically as a result of arbitrary placement of mental or written mathematical symbols. Spatial acalculia is often caused by damage occurring in the posterior section of the right hemisphere of the brain. Examples of spatial acalculia are abundant: They include rotation of numerals, omission of numerals, the inability to construe the meaning and placement of operator symbols (+, −, ×, ÷), and deficient knowledge of place value as a result of numeral misalignment. In the latter instance, an individual will be unable to subtract $32 - 17$ because the "7" is either under the "3" or haphazardly placed below and to the right of the "2."

Anarithmetria

Anarithmetria, an acquired neurological deficit in mathematical thinking, does not involve problems in reading and writing of numbers or the spatial ar-

range of numerals; rather, it involves an acute difficulty in retrieving basic number facts and arithmetic procedures. It is important to note, however, that individuals with anarithmetria usually understand arithmetic concepts, but arithmetic procedures are lacking, most often due to an inability to retrieve basic facts and procedures from memory. Two frequent problems associated with anarithmetria in young children are the confusion of operation signs and perhaps more frequently, the retrieval of arithmetic facts. Research in anarithmetria suggests that individuals who experience difficulty with arithmetic fact retrieval also experience procedural deficits in language. Damage to the posterior regions of the left hemisphere has been found to be the major cause of individuals who show signs of anarithmetria. N. Badian (1983) identified a fourth category, attentional-sequential dyscalculia, in which individuals make strings of careless errors when performing procedures and experience extreme difficulty when memorizing basic arithmetic number facts, particularly those involving multiplication.

COGNITIVE DEFICIT MODEL

Unlike neuropsychological deficit, individuals with cognitive deficit possess mathematical learning disabilities that are not a result of brain injury. Cognitive deficits in mathematical processing include the following: lack of counting knowledge; problems with working memory and memory development; developmental problems with regard to procedural and fact-retrieval knowledge, and the speed at which one processes information.

Counting Knowledge

Counting knowledge and counting skills provide the framework for early arithmetical development. It is therefore possible that mathematically disabled individuals' difficulties in basic arithmetic are related to a poor understanding of counting concepts. These difficulties may arise out of the inability for certain individuals to move beyond certain effective but inefficient counting strategies (counting all—counting all members of two or more sets to find a sum; or counting on—identifying the total number of one set and counting on from the other set to find a sum). Mathematically disabled individuals often use their

fingers to count objects or numbers in their mind. However, it should be noted that finger counting is not an indication of mathematical disability. One's inability to proceed beyond object counting will hinder that individual's success in formal arithmetic operations and more complex mathematical concepts in later years.

Working Memory and Memory Development

In general, mathematically disabled students who do not have any kind of neuropsychological disorder are usually poor with regard to memory and procedural and fact-retrieval skills. They often have difficulty in memorizing basic number facts, and often find it very difficult to memorize common conversions (e.g., $\frac{1}{2} = 0.5$) and important mathematical formulas ($a^2 + b^2 = c^2$, or even more basic than the Pythagorean Theorem, any number multiplied by 0 is equal to 0—the zero property). Similarly, their procedural skills are often fraught with errors. For example, they will be unable to calculate the sum or difference of two familiar fractions. Although research in the area of mathematical disability is consistent with regard to procedural knowledge, findings concerning conceptual knowledge among mathematically disabled individuals are mixed. In some cases, mathematically disabled individuals are unable to identify efficient strategies for solving problems; however, their conceptual knowledge may be clear. For example, nearly all mathematically disabled individuals will be unable to add $45 + 59$. However, a large number of these individuals will tell you that the sum is around 100. So, the notion of number sense with regard to rounding is fairly strong.

Mental Addition Using Procedural and Fact-Retrieval Knowledge

In assessing students with learning disabilities, it is as important to identify strengths as it is to understand difficulties. Often, children with learning disabilities are surprisingly adept at informal mathematics. When asked to perform some simple mental addition problems, mathematically disabled individuals often have a great deal of difficulty. In one scenario, an interviewer asks a third grader to add $16 + 8$ and $12 + 13$. The child eventually reaches

the correct answer. These children may seem as if they are thinking through each problem given to them; however, they do not seem to know the answers from memory.

Another child, a fourth-grader, is asked to add $14 + 15$. He did several interesting things. First, he started with the larger number. In general, this is a good method and makes addition simpler. Although these numbers are so similar, it does not make a great deal of difference. Then, he broke the 14 into $6 + 6 + 2$. Perhaps he invented this method himself; perhaps someone helped him develop it. In either event, the boy's procedure involves transforming the problem into more manageable chunks. This method of changing a difficult problem so it is easier and more manageable (a process known as "chunking") is common, and generally considered evidence of sound thinking. Again, this is a common characteristic of mathematically disabled children with regard to arithmetic operations. Further, this implies a great deal about assessment procedures.

Testing or assessment should go beyond evaluating whether or not a student has memorized facts and procedures. Assessment should provide some insight into a student's strategies, thinking ability, and potential for learning. Testing should also help us understand students' styles of learning, what they believe, and how they feel, because these factors too can have an important impact on learning.

Processing Speed

The general finding with regard to processing speed is that mathematically learning disabled children need more time to solve arithmetic problems than do their mainstream peers. A few reasons may account for this finding. First, one body of research suggests that mathematically disabled children are generally slower than mainstream peers with regard to the execution of all processes related to number and operation. Another finding is that since mathematically disabled individuals use different, and often inefficient, problem solving strategies, they will tend to spend a longer amount of time solving arithmetic related problems. Third, mathematically disabled individuals often rely more on less efficient counting strategies—for example, counting all when adding members of two or more sets—and do not frequently use faster fact-retrieval strategies (Geary 1994).

Processing speed and working memory are interrelated, however. One particular area with regard to the interrelationship between processing speed and working memory in which researchers are interested is counting speed; the speed at which one counts might determine the speed and ease at which individuals can process basic arithmetic facts—a skill that is inextricably linked with long-term memory.

THE COGNITIVE-NEUROPSYCHOLOGICAL MODEL

Although the literature regarding mathematical disabilities developed into two distinctively different operational domains—namely, the neuropsychological model and the cognitive model—researchers within the last two decades have investigated the link between mathematical disability as a result of brain injury on the one hand, and cognitive deficit (not resulting from brain injury) on the other. This new domain is referred to as the cognitive-neuropsychological model. One of the primary concerns of researchers in this area is to show that a cognitive skill, for example, the concept of subtraction, can be organized into several processing components. Any form of brain damage that selectively disrupts any one of these components can be examined not only from a neurological perspective, but also from a cognitive-psychological perspective. One question that can be asked is: How might the roles of response time (i.e., processing speed) and working memory affect an individual's skill in solving a mathematical problem, when their mathematical knowledge base has been hampered or delayed as a result of brain injury?

A cognitive-neuropsychological framework can be useful for a few reasons. First, since the cognitive

model may serve to help understand brain injured individuals' delayed performance in particular cognitive domains, the cognitive-neuropsychological model can be helpful in understanding the processing of information in individuals with a total lack of cognitive ability within a particular cognitive domain. In addition to illuminating our understanding of acquired disorders (e.g., acquired dyscalculia), a cognitive-neuropsychological model can be useful in terms of our understanding of developmental disorders as well (e.g., developmental dyscalculia).

DO GENETICS IMPACT MATHEMATICALLY DISABLED INDIVIDUALS?

To date, there is little, if any, evidence that suggests that mathematical disabilities are a result of heritability—that is, a genetic influence on mathematically disabled individuals. Research has substantiated, however, that approximately half of the variability in basic number and operations ability among young children is a result of a genetic influence. Nevertheless, the possibility that mathematical disability is associated with a genetic component is important to consider in that if most mathematically disabled children represent the left tail of the normal distribution curve with regard to arithmetic ability, then a lack of adequate performance in this area may have a great deal to do with a genetic influence, especially if these same children are reading disabled. Since there are common cognitive factors that influence both reading ability and arithmetic ability, more research is needed to verify a link among mathematical disability, reading disability, and other forms of learning disabilities.

Daniel Ness

GLOSSARY

Associativity. An arithmetic and algebraic principle that verifies that an operation performed on two numbers (a and b), and the same operation performed on the outcome of a and b with another number c will yield the same total outcome as an operation performed on a with the outcome of the same operation performed on b and c . That is, $(a + b) + c = a + (b + c)$, or $(a \cdot b) \cdot c = a \cdot (b \cdot c)$. Associativity is applicable to the addition and multiplication operations only.

Abstraction principle. A rule which states that a counting procedure can be applied to individual objects or to whole groups of objects, and that counting objects of a different kind is applicable to the counting process.

Algorithm. A systematic method or procedure that is used to solve a quantitative mathematical problem that cannot otherwise be solved by number fact memorization alone. Standard algorithms are those that have been widely accepted by mathematicians and mathematics teachers.

Binary operation. A mathematical procedure involving two and only two variables or constants. For example, $3 \cdot 4$ is a binary operation because the operation—multiplication—involves two constants (3 and 4); $q \cdot r$ is a binary operation because the operation involves two variables (q and r). The symbol “ \cdot ,” however, must be defined.

Calculus. A means whereby one can obtain instantaneous velocity and whose fundamental ideas involve differentiation and integration.

Cardinality. The number that refers to the total number of objects in a set. For example, “five ducks” has a cardinality of five.

Cardinality principle. A rule that states that the last number word written or stated verbally refers to the number of objects in a set.

Cartesian coordinate system. A system of geometric representation based on two axes (x and y) and containing a finite number of units—a system developed by the seventeenth-century rationalist philosopher and mathematician René Descartes.

Commutativity. An arithmetic and algebraic prin-

ciple that verifies that an operation performed on two numbers (a and b) will yield the same outcome if the operation were performed on the same numbers with b as the first number and a as the second. That is, $a + b = b + a$, or $a \cdot b = b \cdot a$. Commutativity is applicable to the addition and multiplication operations only.

Conceptual knowledge. Knowledge based on the recognition and identification of patterns and relationships. Conceptual knowledge is achieved by the construction of relationships between often factual pieces of information.

Conservation of number. The ability for an individual to distinguish between the cardinality of a set and the physical arrangement of the objects of that set.

Conservation of space. The ability for an individual to recognize the capacity of an uncountable object (e.g., water, clay, sand) as being the same regardless of the size of the container that is holding the object.

Counting all. Identifying the sum of the objects of two or more sets by counting each member of both sets. Compare with “counting on.”

Counting on. The identification or recognition of a number of an initial set of an addition problem and the subsequent adding of each member of the second set to the initial set without the counting of the entire two sets. For example, a child is asked to add $14 + 5$. The child replies: “fourteen . . . fifteen, sixteen, seventeen, eighteen, and nineteen” without counting the first fourteen numbers aloud. This procedure is more time efficient than counting all.

Declarative knowledge. See “conceptual knowledge.”

Distribution. An arithmetic or algebraic principle that asserts that the sum of two products is equal to the product of two sums, or vice versa. That is, $ab + ac = a(b + c)$, and similarly, $a(b + c) = ab + ac$.

Enumeration. Knowledge of number concepts and operations on whole numbers.

Estimation. An answer to a mathematical problem based on an individual’s reasonable approximation. For example, a second grade child might say the answer to $23 \cdot 4$ is “about 100.”

Euclidean geometry. A system of spatial repre-

sensation dealing with axioms, postulates, and definitions, and whose initial proponents were Euclid and his collaborators. Common ideas regarding Euclidean geometry include the axiomatic constructions starting with a point (undefined), a line (two points determine a line), a plane (three points, two of which are not on the same line, determine a plane), and parallelism, or the parallel postulate (two lines l and m are parallel if the alternate interior angles created by a transversal [line n] are equal).

Everyday mathematics. Identification of an individual's mathematical thinking in out-of-school contexts (e.g., free play, work). Everyday mathematics can be spontaneous or gradual.

Function. An operation applied to a variable (or set of variables) that yields an entity known as the value for that particular variable. This is commonly exemplified by $y = f(x)$, where y is said to be a function of the variable x if for every x , there is one and only one value of y .

Grouping. The creation of two or more sets of objects for the purpose of combining all sets for determining the cardinality of the number of objects in all sets. A child separates a large set of 23 objects into four groups in order to determine the total number of objects in the set (informal addition): The first group contains 4 objects, the second group contains 6 objects, the third group contains 6 objects, and the fourth group contains 7 objects.

Iconic representation. A distinct mark not directly related to a particular object's appearance that is used to represent the object. For example, a child may draw eight Xs to represent eight checkers. Other forms of iconic representation include tally marks, dots (not circles or zeroes), checkmarks, or asterisks.

Invented strategy. A plan used to solve a mathematical problem that does not employ a standard algorithm. Invented strategies are not formal in that they are generally constructed on prior knowledge in the everyday environment.

Irrational number. a number that is not rational. Any number that *cannot* be expressed as a/b , where a is an integer and b is a nonzero integer. A non-repeating decimal.

Logico-mathematical thinking. A term defined by Jean Piaget that refers to the processes undertaken by individuals who eventually reach a level of math-

ematical thinking associated with formal operations.

Manipulatives. Objects that are manufactured for the purpose of connecting an individual's informal knowledge of mathematics with formal or in-school mathematical knowledge. Examples abound and include Cuisenaire rods, Geoboards, and Base-10 Blocks.

Mapping. An individual's representation of objects (material or abstract) of space in his or her own environment. Some of these concepts include scale, perspective, direction, linking the written representation with its referent (for example, a roadmap of a town with the actual streets within that town), and the coordinate system.

Number. An abstract idea that can be used for representing cardinality when referring to a set of objects or for differentiating between two or more objects—or labeling (e.g., bus numbers, addresses, telephone numbers).

Number sense. One's knowledge of the number concept and the ability to use binary operations on those numbers. One's identification of patterns and relationships associated with different numbers.

Number facts. The answers to binary operations (based on the four primary operations of arithmetic—namely addition, subtraction, multiplication, and division) whose addends, minuends, subtrahends, factors, divisors (not always dividends), and quotients are not less than 0 and not greater than 12 (sometimes 10). A few examples include (see underlined) $5 + 2 = 7$; $9 - 4 = 5$; $3 \times 8 = 24$, and $30 \div 6 = 5$.

Numeracy. Computational fluency, or fluency in the identification or recognition of patterns and relationships among mathematical concepts.

Numeral. A symbol used to represent a number (e.g., "7" for seven objects).

Numerosity. A set of one or more objects that can lead to numerical reasoning for young children. Examples include three apples, two beach balls, one candle, five checkers, and the like.

One-to-one correspondence. The ability to recognize elements of a set such that each element corresponds to one and only one number.

One-to-one principle. A rule that states that only one number word can be associated with one and only one object when counting a set of objects.

Operation. A mathematical action that involves two or more variables or constants.

Order relevance principle. A rule that states that the assignment of a number to a particular object when counting is irrelevant.

Procedural knowledge. Knowledge consisting of (1) familiarity of mathematical symbols and syntax for writing those symbols, and (2) the rules, algorithms, or procedures used to solve mathematical tasks.

Protoquantitative knowledge. Young children's knowledge of numerical quantities in the form of amounts, but not in the form of numerosities.

Pushing aside. A memory-reduced technique that young children use to count that involves the exclusion of objects once they have been counted. For example, a child may push a penny aside, bend each finger, or collect objects while counting.

Quantitative knowledge. Young children's knowledge of numerical quantities with small numerosities.

Rational number. Any number that can be expressed as a/b , where a is an integer and b is a non-zero integer.

Seriation. The process of creating or ordering a sequence by a specific attribute such as length, weight, or time.

Spatial sense. One's knowledge of spatial relationships for interpreting both abstract and real-world geometric phenomena. One's identification of patterns and relationships associated with geometric figures.

Spontaneous mathematics. Mathematical cognition that emerges from activities during play. For example, two children building a structure with blocks demonstrate spontaneous mathematics in the following manner: Child 1 takes two long blocks and indicates that the blocks can be used to cover one side (or wall) of a four-sided structure. Child 2 says: "OK, we need 8 [blocks]." (See "everyday mathematics.")

Stable order principle. A rule that states that number words are written or verbally stated in a fixed sequence.

Standard algorithm. See "algorithm."

Subitizing. Instantaneous visual recognition of numerosities without the necessity of counting each member of individual sets or collections. Subitizing is not a primitive form of number development; young children subitize for the purpose of developing efficient mechanisms for solving arithmetic problems.

Symbolic representation. Numerals, regardless of system (e.g., hindu-arabic, Roman, Egyptian) used to represent a set of objects. For example, the child will write the number "5" to represent five teddy bears.

Tagging. The process of touching each object in a particular set (i.e., unit cubes, pennies, fingers) once and only once without movement of each object for the purpose of counting.

Topological primacy thesis. A theoretical model of Jean Piaget that argues that the earliest forms of spatial knowledge are plastic and dynamic in form and structure, not rigid in the sense of Euclidean geometry.

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V

**EDUCATIONAL ISSUES CONCERNING
DIVERSE POPULATIONS**

LEARNER DIFFERENCES

Individual differences among learners have been used to explain the ways in which students learn, to describe groups of students, and to provide guidance to educators in planning instruction for learners to maximize achievement outcomes. They have also been used to group students who fall at the extreme ends of the population distribution as gifted or in need of special education services. While there are obvious physical differences among children and adults (height, weight, manual dexterity, speed, agility, etc.), the focus on individual differences in the classroom is generally in the realm of cognitive differences and sometimes crosses over into behavioral domains that may impair the learning process. The cognitive differences that have been measured and used in decisionmaking in classrooms range from global concepts, such as general intellectual ability (IQ), to very specific differences in learning styles and interests.

Assessment of differences in human abilities and achievement is not a new phenomenon. The Chinese civil-service system established more than 4,000 years ago used a formal testing program to select candidates for government positions. Teachers in one-room schoolhouses in the United States clearly distinguished between the achievement levels of their students and assigned learning tasks accordingly. However, the history of the study of individual differences for the sake of understanding differences in learning, achievement, and ultimately the effects of educational intervention began with the work of psychologist Sir Francis Galton (1962).

INTELLIGENCE AS A DIMENSION OF INDIVIDUAL DIFFERENCES

In the late nineteenth century Galton studied eminent men, their mental abilities and the hereditary and environmental influences on the development

of “genius” (1962). His work influenced the work of the American psychologist J. M. Cattell who brought Galton’s tests and research approaches to the United States, led the movement to include the study of individual differences in the science of psychology, and was instrumental in the spread of the testing movement in the United States (Anastasi 1988). At about the same time, Alfred Binet was charged by the French government to develop an assessment tool that would identify those children who were likely to have difficulty learning in school (Binet and Henri 1896). This led to development of the Binet-Simon Test of Intelligence that provided a measure of “mental age.” The work of Simon and Binet was translated and adapted in the United States by Lewis Terman into an instrument known as the Stanford-Binet, and it was in this instrument that the intelligence quotient (IQ: the ratio between mental age and chronological age) was introduced. Terman used his instrument in the identification of gifted children whom he then studied for more than thirty-five years (1916).

The Stanford-Binet required individual administration by a trained examiner; hence, it was best suited to clinical use. The development of objective tests that could be administered to groups of individuals by the U.S. military became the model for most group intelligence tests that exist today and spurred a tremendous growth in intelligence-test development. Soon assessment programs were in place to measure the general intellectual ability of children and adults of all ages from preschool through graduate school. The widespread use of these tests was accompanied by parallel use of these tests in categorizing children, making selection decisions for admissions to schools, colleges, and universities, and for placement in special programs based on individual differences measured by these instruments.

While intelligence tests were shown to be a good

predictor of school achievement, they have been widely criticized for not measuring specific abilities that distinguish the performance or potential performance along other dimensions considered important for success in the various disciplines. Accordingly, other psychologists began work to develop tests of specific abilities. Early tests focusing on mechanical, clerical, musical, and artistic abilities were used primarily for vocational counseling and in the classification of personnel in industrial and military settings, but led quickly to the development of multiple aptitude batteries designed to yield information about individual differences on traits such as verbal comprehension, numerical aptitude, spatial visualization, arithmetic reasoning, and perceptual speed. The most extreme example of breaking down cognitive functioning into individual components that were then translated into instructional recommendations was the development of the Structure of Intellect Model by J. P. Guilford, which identified ninety different specific abilities (1967). The model was then used by Mary Meeker to create instructional materials to address each component of the model (Meeker and Meeker 1986).

Intelligence tests were widely used in schools to make decisions about student placements, to identify students who might be gifted or those who were categorized as mentally retarded. In some cases they were used to group students in classrooms, leading to a practice identified as tracking. Tracking occurred when students who were first grouped on some general aptitude measure were then identified as having a given level of potential and grouped accordingly in classrooms for instruction. These students then stayed in that group throughout their school careers with little or no opportunity for moving into another group. The result for many students was the loss of opportunity to take high-level high school courses that would lead to college or other opportunities following high school. Tracking was widely criticized in the 1960s as a means of restricting the opportunities of poor and minority students.

Widespread use of intelligence tests, especially in clinical diagnoses of children and the representation of mental ability as a single score, continues and the use of intelligence tests for grouping students continues to be criticized on many grounds. During the 1980s and 1990s the conception of intelligence was broadened through the work of two psychologists, Howard Gardner (1983) and Robert Sternberg (1985). Gardner

coined the term “multiple intelligences” for the dimensions of intelligence he identified as a result of his retrospective case analyses of gifted individuals, and he identified linguistic, logical/mathematical, spatial, musical, bodily/kinesthetic, interpersonal, and intrapersonal intelligences. He later added naturalistic intelligence and then, even later, posited existential intelligence. The first three initial intelligences (linguistic, logical/mathematical, and spatial) closely parallel domains sampled on conventional intelligence tests, and the first two, according to Gardner, are the domains emphasized in traditional assessment and instruction in schools. Linguistic intelligence taps the ability to use language to explain, to convince, to remember information coded as language, and to clarify meaning. To operate on relationships using abstract symbols and symbol systems and to evaluate ideas and quantities logically are considered to fall into the logical/mathematical domain. Spatial intelligence requires the skills of perceiving and transforming visual-spatial relationships.

Those who have profiles which are strongest in one or more of the remaining five intelligences are valued by most cultures, but are not traditionally measured by group intelligence tests or given equal emphasis in school. Those in whom musical intelligence is exceptional excel in sensitivity to musical nuance and are able to appreciate, produce, and combine pitch, tones, and rhythms. Skillful use of one’s body to dance, mime, compete athletically, and so on, is considered bodily-kinesthetic intelligence, and exceptional understanding of and sensitivity to other people’s motives, behaviors, and emotions characterizes interpersonal intelligence. Persons who excel notably in intrapersonal intelligence are those who reflect understanding of their own motives, emotions, strengths, and weaknesses. Finally, naturalistic intelligence requires understanding patterns found in the natural environment, and those who have gifts in existential intelligence are able to ask and reflect on important questions about life, death, and the ultimate realities.

Gardner’s work was applied in the education literature to curricula and teaching guides that suggested that teachers should teach to develop the particular intelligence that dominated the child’s profile. An industry developed around the production of materials that would teach the disciplines using strategies modeled on the descriptions of the individual intelligences. Gardner has debunked several myths that

have arisen through schools' misapplication of the multiple intelligences (MI) theory, including the notion that there should be a separate intelligence test for each of the identified intelligences. Further, he did not support the development of activities to "teach" the intelligences or to treat them as discipline to be taught like science or social studies. Rather, he has suggested that the appropriate use of an understanding of individual differences in profiles is to capitalize on that knowledge by using the profiles to more effectively teach the disciplines. He suggests introducing topics in ways that most engage learners because of the connections they can make to the new ideas through examples drawn from the various intelligence domains, by drawing analogies using a model derived from areas where students may have stronger knowledge because of a more highly developed intelligence, and by providing multiple representations of the central or core ideas of a topic. He cautions, however, these uses of the intelligences must be congruent with high standards and true representations of the concepts and themes of the topic being taught (Gardner 1999).

Sternberg's conceptions of intelligence were triarchic in nature (1985). He identified three basic types of intelligence: analytic intelligence, synthetic intelligence, and practical intelligence. Those strong in analytic intelligence are those who would be identified by traditional assessments of intelligence and ability. They excel at analytic intelligence and are those who succeed in traditional school learning. They are able to identify a problem, define its nature, devise a successful solution, and monitor execution of the solution. Those who are strong in synthetic intelligence are those who are identified as creative—able to come up with unique ideas and unusual, but appropriate, solutions to problems. Finally, practical intelligence is characterized by the ability to solve the ill-defined problems that come up in everyday life and to implement solutions and make them work. Translating his conceptions of intelligence into assessment tools and curriculum, Sternberg has demonstrated that teaching using a curriculum that is structured to address the intelligence strength of a group of students results in greater learning. Those who excel in all three intelligence dimensions demonstrated the greatest success on tasks of all types.

Carolyn Callahan

LEARNER DIFFERENCES IN ACHIEVEMENT

Many other dimensions have been considered in the assessment of individual differences in students for the purpose of grouping students, developing tailored lessons, or motivating students. The most widely used are tests of achievement. Achievement is assessed informally daily in classrooms through observation and questioning of students, and on an intermittent basis by unit or end-of-year tests. The first standardized achievement tests were introduced in the United States in the 1920s, very soon after the introduction of intelligence tests. The use of standardized tests that measure very defined state goals through statewide competency testing or through standardized tests that attempt to compare students to carefully selected norm groups is usually conducted on a particular identified grade level in schools (every several years). The initial development of these tests was based on the notion that they would allow for comparisons of individual differences in learning using more objective measures than grades or individual teacher or local assessment. Parents, teachers, and administrators could compare an individual student to students across the nation. Expansion of the use of both nationally standardized and statewide assessments has led to their application to high-stakes decisions about student placements in special programs and for student advancement or graduation from high school.

Regardless of how achievement is assessed, learner differences in prior knowledge greatly affect the students' learning. Hence, attention to differences in three types of prior knowledge should guide instruction: declarative knowledge or knowledge that students can articulate about what they know; procedural knowledge or ability to act on what they can state; and conditional knowledge or the ability to use their declarative and procedural knowledge in new situations. Understanding learner differences in preexisting knowledge—both correct and incorrect knowledge—has been identified by the National Academy of Sciences as critical in planning effective learning experiences for children. Successful learning experiences are built on understanding a student's current knowledge, including incomplete understandings, false beliefs, and naïve conceptualizations of

ideas, and then creating learning activities that will help students construct more mature understandings.

CREATIVITY

As a result of the presidential address to the American Psychological Association by J. P. Guilford in 1950, considerable attention was directed toward investigating individual differences in creativity. Debate surrounding assessment of individual differences in creativity focused on the multiple ways creativity was being defined and the modifiability of creativity through instruction. The literature variously defined creativity as part of the thinking process, as a personality variable, or as reflected by the ideas or creations of the individual. Accordingly, activity focusing on the measurement of differences among school-age children and adults resulted in the creation of measurement tools ranging from personality tests to evaluations of the processes and products of creative productivity. Self-report personality instruments assessing creativity included items intended to measure such factors believed to contribute to creativity as risk taking, tolerance for ambiguity, and perseverance—all personality characteristics that were found in creative producers. Other product-oriented instruments (e.g., the Torrance Tests of Creativity) focused on asking the students to complete such tasks as generating multiple alternative uses for common objects or modifying a toy to make it more fun to play with. The responses were scored on fluency (number of different responses), flexibility (number of different categories of responses), and originality (the statistical uniqueness of each response). Adult creativity assessments such as the Alpha Biographical Inventory matched attitudes, values, and behaviors of the examinee to a set of characteristics derived from the study of creatively productive persons. Research on creativity using the assessments based on products provides limited evidence that fluency, flexibility, and originality of responses (outcomes associated with the creative process) can be modified by instruction. Creativity is another dimension of learner differences that is sometimes central to definitions of gifted and talented students, and various assessments of creativity, including teacher ratings of creativity, creativity tests, and the creativity of student products as included in portfolios, are sometimes used in the identification of students as gifted and talented.

COGNITIVE STYLE/LEARNING STYLE

A decade after the focus on creativity, psychologists introduced the concept of cognitive style to the lexicon of cognitive differences. Messick (1993) provided a general definition of cognitive style as consistent individual differences in preferred ways of organizing and processing information and experience. The first introduction of cognitive style by Witkin (1977) was a study of the dimension of field independence and field dependence or the degree to which the immediate stimuli and conditions surrounding a problem influence the perceptions and strategies used to solve a problem. Since that time, more than fifty-four dimensions of learning style have been discussed including reflective/impulsive style and analytic/holistic styles, but some authors have claimed these all fall into a range of differences that can be categorized as spanning from analytic to intuitive. Analytic information processing is more compliant and adherent to rules, is structured in the decisionmaking process, and often follows step-by-step procedures for solving problems. Intuitive processing tends to be more non-conformist, uses more open-ended decisionmaking strategies, relies on more random methods of exploring potential solutions to problems, and uses a more holistic approach to problem solving.

Another view of learning style differences in students in classrooms, introduced by Rita and Kenneth Dunn (1978), incorporates many of the psychological dimensions of cognitive style, but goes beyond those dimensions to encompass the following domains: environment (light, sound, temperature, design), emotional (motivation, persistence, responsibility, need for structure or options), sociological (self, peer, team, adult, varied motivators), physical (time of day, need for mobility, etc.), and psychological (global/analytic, impulsive/reflective).

Joseph Renzulli and Linda Smith (1978) have also identified the degree to which students prefer one specific learning/teaching strategy to others as a learning style. While one might assume that children of certain ages, certain abilities, or from certain cultures might prefer to engage in learning in a particular way, the evidence suggests that in any group there is variability in the degree to which students prefer to listen to a lecture, participate in a discussion, be

involved in a simulation activity, or engage in learning through other teaching strategies.

OTHER COGNITIVE LEARNER DIFFERENCES

Developmental differences in such areas as metacognition, the ability to monitor one's own learning and problem-solving strategies, may also affect learners' abilities to succeed in a given learning situation. While developmental theory provides guidance in the sequence of development and the approximate ages for attaining certain levels or stages of development, within any group of children there will be wide variation. For example, young children often fail to use effective strategies like rehearsal for remembering information because they believe that once they hear or read something they will remember it. As students mature they are likely to come to understand the importance of rehearsal, but not all children come to this realization and internalize it at the same age.

INTERESTS

Interests are grouped into the two categories of relatively stable interests and those that are generated in particular situations and may or may not last. The first type of interest, individual interests, are those that are associated with the predisposition to be attentive to and engaged in a topic. They have usually developed over time and are enduring and sustained. Situational interests are those stimulated by a set of environmental conditions that generate a more immediate short-term affective/emotional response in a particular context. Of course, situational interests may develop into individual interests. Students who are interested in particular topics either because of individual or situational interest pay closer attention, persist for longer periods of time, learn more and enjoy the learning process more than those who do not exhibit interest.

OTHER INDIVIDUAL DIFFERENCE VARIABLES

Researchers consider other noncognitive variables as important factors for school success. One of these is theory of mind—the ability of a person to predict

and explain another person's behavior by considering the person's mental state and consequent response to that mental state. The development of this ability is considered important to the everyday social interactions of children and adults. The lack of appropriate social and communicative ability of individuals with autism is associated with very low levels of developed theory of mind. Further, higher levels of theory of mind are associated with more advanced cognitive functioning in such areas as executive functioning, creativity, and language.

Another individual difference that educators and psychologists have identified as an important element contributing to student success in the classroom is temperament. Rather than a characteristic that describes what a student does and how well the student does it, temperament describes how a student goes about learning and performing in the classroom. Differences in temperament are described on a continuum. On one end are the students who have a slow tempo, do things at an unhurried pace, and are slow to action. They are seen as students who have trouble finishing assignments, lag behind their peers, and are constantly being urged to "catch up." On the other end of the continuum are the highly active, impulsive, quick-to-respond children who are always starting an assignment before the directions are completed and rush to finish any task. Temperament is also described as difference in children who need changes in routine and those who find changes in routine upsetting, difference in those who persist at a task and those who give up easily, and those who are shy and those who join right in. While temperamental differences in individuals have always been noted, little attention has been given to the ways these differences have affected students' achievement, adjustment, and overall experience in school until recently. Recent research suggest that differences in students' temperaments affect the ways they approach learning tasks and interact with teachers' temperaments affecting their adjustment to the classroom, and the goodness of fit between the student and the school (Keough 2003). The research has led to suggestions for assessments for classrooms and for positive preventive strategies to help teachers avoid discipline, behavior, and learning problems in the classroom.

Carolyn Callahan

ABILITY GROUPING

The practice of ability grouping has been controversial for the last two decades. Part of the controversy stems from the confusion between the terms *ability grouping* and *tracking*. The term *ability grouping* refers to the practice of using test scores and/or other indicators of student ability and/or achievement to assign same-grade students to classes or instructional groups within a class or across classrooms. It may be used to group children into high, middle, and low classes or learning groups in elementary school or into varying levels of core classes at the middle school or high school level. It may be used by teachers to assign students to high, middle, or low reading or mathematics groups within the same classroom for instruction or it may be used to group students across several grade levels who are at the same level of achievement into groups for reading or mathematics instruction (cross-grade or cross-age grouping).

The term *tracking* was once restricted to the practice of recommending to students that they elect a course of high school studies leading to a particular vocational goal. The practice of tracking was considered to be a self-selection process left to the choice of students. However, the term has come to be applied to the practice of sorting students at an early age into high level, medium level, and low level classes, on the basis of measures of intelligence, where they remain through high school. As a rigid and immutable practice, tracking has received great criticism, which has been extended to the practice of ability grouping. The intention of ability grouping was not to create permanent configurations of students; however, when schools do not provide opportunity for students to gain the knowledge and skills necessary to move between groups or do not use frequent assessment to reassign students appropriately, tracking may result.

Clarification of terms used to discuss grouping is essential. Homogeneous grouping is the practice of using some pre-set criteria such as an aptitude test score, achievement test scores, or some other measure of academic ability or achievement to create instructional groups that contain only one level of student. Homogenous groups may be whole classes or they may be small groups within a class. Heterogeneous grouping arrangements result when students

are systematically or randomly assigned to groups so that each group consists of students of a wide range of ability or achievement levels. Within-class grouping is the term often used to describe homogeneous small groups within a classroom. They are commonly used for mathematics and reading instruction in the elementary school. In Joplin and cross-grade grouping, a practice most common in reading instruction, students from heterogeneous classes at different grade levels, but at the same level of achievement or ability, are grouped for instruction. In whole-class ability grouping, students of like ability remain together for most of the instructional day. Accelerated classes of students (typically identified as gifted students) are provided a curriculum that allows them to advance through the traditional grade levels at a pace faster than their peers. Cooperative learning groups are usually small heterogeneous (although sometimes homogeneous) groups in which students are presented with specific instructional tasks to complete, and success of the group is as critical as individual success.

Ability grouping in most forms was widely practiced in the United States through at least the 1980s, and there is evidence that in some school districts tracking was also widely practiced. Accelerated classes are quite rare. There has been considerable attention to “de-tracking” students particularly at the elementary and middle school level, and the practice of heterogeneous classroom grouping at the elementary and middle school is now widely espoused by educators. However, there is evidence that grouping by subject area still is widespread at the high school level and at least in the discipline of mathematics in middle schools. The debate about the advantages and disadvantages of grouping is ongoing in the educational literature.

Arguments among educators supporting or not supporting grouping practices are based on whether or not they believe grouping improves achievement, whether or not grouping is inconsistent with the democratic ideal that all students should have equal opportunity to learn, whether the grouping practice promotes the notion that abilities are fixed, and whether or not ability grouping results in discrimination by race, ethnicity, or socioeconomic status.

The research on ability grouping is extensive, with the first studies as early as 1928. While hundreds of studies were conducted in subsequent years, research-

ers who tried to analyze the data across the accumulated evidence were unable to draw consistent conclusions. Some of the inconsistency in interpretation stems from the fact that many different types of grouping practices have been studied using many different measures of outcomes. Other reasons for the inconsistency may be related to the orientation of researchers who conduct the studies. A historical look at interpretations over the past seventy years provides some insight into this possibility. One group of researchers in the 1930s concluded, not surprisingly, that when students were grouped by intellectual ability and the ability groups worked with materials that matched their aptitude level, the instruction led to more positive school outcomes. When the same instructional and curriculum materials were used in all classes, there were no differences between students in homogeneous classes (ability grouping) and those in heterogeneous classes. Progressive educators who were followers of John Dewey in the later 1930s concluded from their reviews that grouping led to lower achievement and diminished self-concept and leadership. Reviews in the 1950s, when there was an emphasis on academic excellence, concluded that students with high aptitudes benefited from special accelerated and enriched classes with no detriment to social or emotional adjustment. Then, during the 1960s, coincidental with an emphasis on the issues of equity in schools, researchers concluded that no one benefits from ability grouping and that the achievement, academic motivation, and self-esteem of the lower and middle groups was adversely affected by grouping. The multiple interpretations of the research resulted in the application by educators of whichever findings suited an individual bias.

In the 1990s, using new methodologies, researchers did large-scale observational studies of tracking in junior and senior high schools, concluding that instruction was of higher quality in the higher-track classes. No quantitative data relative to student achievement was provided to support the observations in these studies and they have been criticized for attributing too much importance to very small differences and not separating the effects due to grouping and those due to student characteristics. A second approach used in recent studies is that of studying grouping by analyzing very large databases collected by the U.S. government. Researchers found that most high school seniors were in the track they

wanted to be in; that the factor second in determining track placement (after personal preference) is academic ability; that social class does not appear to be important in determining curriculum except to the degree that social class influences test scores; and that race plays a small role in placement. In fact, when blacks and whites of equivalent aptitude and socioeconomic status are compared, blacks have a greater probability of being enrolled in the higher-track classes.

Other extensive analyses of all the grouping studies, using other strategies for analysis that had both experimental and control groups and which looked at grouping where the curriculum was adjusted and grouping where the curriculum was not adjusted by group, resulted in the following conclusions:

- When curriculum is not adjusted, lower and middle aptitude students learn about the same amount in grouped and mixed classrooms. Middle and lower classroom groups who earned about one year's worth of achievement in a mixed classroom would earn about one year's worth of achievement in grouped classrooms.
- In one analysis, when curriculum is not adjusted, grouping results in a slight positive effect on higher aptitude students. Students who would earn one year in mixed classes would earn 1.1 years in grouped classes. Another analysis failed to find an effect for any arrangement for any of the groups.
- When no adjustment was made for curriculum, self-esteem scores for the lower group went up slightly and the self-esteem scores for the higher group went down slightly.
- When curriculum is adjusted by accelerating the pace for high ability learners in grouped classes, the achievement of students in these classes exceeded that of students in the classes whose curriculum was not accelerated. When curriculum was adjusted by enrichment, children in these classes gained 1.4 to 1.5 years in achievement compared to 1.0 year for control groups.
- When cross-age grouping and within-classroom grouping using differential curriculum for the groups was compared to mixed group instruction, the average gain for the grouped students in one year was 1.2 to 1.3 years compared to 1.0 year for the control group.

James Kulik (1992) concludes in his review of all the analyses that have been done that if grouped classes where no curriculum differentiation occurs were eliminated, there would be a slight decrease in achievement for the brightest students and no discernable effect on other students. But, both higher and lower aptitude students would suffer academically if the grouped classes that have actually adjusted materials and methods to address the characteristics of the learner groups were to be eliminated.

Carolyn Callahan

EXCEPTIONALITIES AND SPECIAL EDUCATION

The concept of learner differences naturally leads to consideration of those who fall at the extremes of the population. Of particular note are the categories that have been established to incorporate those with exceptional cognitive abilities including the mentally retarded, those with learning disabilities, and the gifted. In addition, those who are physically impaired or exhibit behavior problems may be identified as exceptional students. Exceptional learners have been defined by Daniel Hallahan and James Kauffman (2003) as those who require special education and related services to realize their full potential.

The creation of programs of special education corresponded to the institution of compulsory schooling in the United States and the influx of immigrants to the United States. Compulsory education introduced large numbers of students who had never been part of the school system and were not able to succeed or conform to the demands of the classrooms. The influx of immigrants introduced a second new population of students who differed culturally, ethnically, and linguistically, and also had difficulty in succeeding in school. Lack of understanding of how to cope with these new students led administrators to create alternative means of educating them. Initially, students who exhibited severe intellectual deficiencies that were the consequence of biological/medical conditions that resulted in central nervous system damage and the lack of ability to function in

the school context were placed in isolated, ungraded classrooms. Over time, the concept of mental deficiency was broadened to include both those with severe retardation resulting from biological causes to milder cases of retardation associated with poverty. As indicated in the description of the early development of intelligence tests, the first directive given to Alfred Binet was to develop an assessment that would help identify those who would be likely to have difficulty learning. The use of the intelligence test became widespread in identification of the mentally retarded (and the gifted).

CATEGORIES OF STUDENTS SERVED IN SPECIAL EDUCATION PROGRAMS

The American Association on Mental Retardation (AAMR) defines the term mental retardation as “significantly subaverage intelligence functioning, existing concurrently with related limitations in two or more of the following adaptive skill areas: communication, self-care, home living, social skills, community use, self-direction, health and safety, functional academics, leisure, and work. Mental retardation manifests before age 18” (AAMR Ad Hoc Committee on Terminology and Classification 1992, 5). In the early twentieth century, the terms *moron*, *imbecile*, and *idiot* were used to identify subcategories of mental retardation based on IQ scores. These category labels were dropped because of their derogatory connotations and current classifications range from mild to profound retardation based on IQ scores. More recent definitions of mental retardation rely less on the concept of IQ and include deficiencies in adaptive behavior as part of the definition, particularly the individual’s ability to communicate, to otherwise interact socially, and to engage in the basic activities of daily living. During the first half of the twentieth century there was a dramatic rise in the numbers and proportion of students identified as mentally retarded (MR). However, the incidence of mental retardation has declined steadily over the past twenty-five years to a prevalence of about 2.3 percent of the population nationally, but there is great variability among states in the rate of classifying students as MR. A disproportionate number of poor and minority students have historically been identified and placed in special classes for the mentally retarded. As of 1998, black children are more

than twice as likely as their white counterparts to be identified as MR.

Learning disability was a term introduced by Samuel Kirk in 1962 to describe students who were not mentally retarded, but exhibited difficulty in achieving academically. The term has come to be an umbrella term that covers a broad range of learning problems that vary considerably from student to student. The term covers conditions that are highly variable in nature and degree, but generally indicates difficulty with information processing. Further, the term may be used to designate one deficiency in processing or it may indicate multiple processing difficulties. The following definition of learning disability was set forth in federal legislation in 1977 and reaffirmed in 1997 (Individuals with Disabilities Education Act Amendments of 1997, Sec. 602(26), p. 13):

- (a) **IN GENERAL:** The term “specific learning disability” means a disorder in one or more of the basic psychological processes involved in understanding or using language, spoken or written, which disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.
- (b) **DISORDERS INCLUDED:** Such term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.
- (c) **DISORDERS NOT INCLUDED:** Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage.

Federal regulations require that an IQ-achievement discrepancy be used to identify students with learning disabilities. Critics have called for revisions of the definition and identification process to eliminate the IQ-achievement discrepancy.

The rate at which students were identified as having a learning disability increased steadily from 1974 through 1994—nearly doubling between the beginning of the 1970s and the end of the 1990s. The rate of identification is now at about 6 percent of the

population. Incidence of learning disabilities also varies greatly from state to state. In 1998 Rhode Island identified 9.75 percent of its students as having a learning disability, while Georgia identified only 3.10 percent.

Learning disabilities often occur in combination with other conditions, such as attention deficit hyperactivity disorder (ADHD). Children and adults with ADHD fall into one of three categories. One category is ADHD, Predominantly Inattentive Type. These students often fail to attend to detail or make careless mistakes, have difficulty sustaining attention, do not listen when spoken to directly, do not follow through on instructions, and fail to finish task and/or to organize tasks, avoid activities that require sustained mental effort, and are distracted and forgetful. Those who are categorized as ADHD, Predominantly Hyperactive-Impulsive Type, fidget, leave their seats in the classroom when expected to remain seated, often inappropriately run about or climb excessively, have difficulty playing or working quietly, talk excessively, blurt out answers, have difficulty waiting for their turn, and interrupt or intrude on others. Students who are Hyperactive-Impulsive do not qualify for special education services if there is no impairment in the learning process. Students may also be identified as ADHD, Combined Type, when they exhibit the characteristics of both the Inattentive and Hyperactive/Impulsive types.

The federal government has defined emotionally disturbed (ED) as a condition in which an individual exhibits one or more of the following characteristics over a long period of time and to a marked extent, and which adversely affects educational performance:

- (1) an inability to learn that cannot be explained by intellectual, sensory, or health factors
- (2) an inability to build or maintain satisfactory relationships with peers and teachers
- (3) inappropriate types of behaviors or feelings under normal circumstances
- (4) a general pervasive mood of unhappiness or depression
- (5) a tendency to develop physical symptoms or fears associated with personal or school problems

In the federal definition, the child who is schizophrenic is included; children who are socially mal-

adjusted are excluded unless they fit the other criteria above.

Fewer children are identified as ED than are identified as learning disabled or mentally retarded; however, black children are at a higher risk of being identified as ED (around 1.5 percent) than any other racial or ethnic group in the United States.

The other disability categories include speech and language impairments, hearing impairment, visual impairment, orthopedic impairment, other health impairments, deaf-blindness, autism, traumatic brain injury, and developmental delay (not all states use this category of disability). All of these categories have very low incidences with the exception of speech and language impairments. Annual reports of the numbers of students served under the federal law called the Individuals with Disabilities Act (IDEA) can be found at www.ideapractices.org on the Internet.

SERVING STUDENTS THROUGH SPECIAL EDUCATION PROGRAMS AND SERVICES

Through the 1970s teachers designated as special education teachers served most exceptional children in special, segregated, and self-contained classrooms. Public Law 94–142 was passed in 1977 and included provisions that individual learning needs should be specifically identified by careful and thorough assessment, that individual educational plans (IEPs) should be developed to guide the instruction and services provided to these students and that these students should receive instruction in the least restrictive environment. This led to the development of a variety of administrative plans for the education of exceptional learners ranging from a few special provisions made by the student's regular classroom teacher to full-time residential care in a special facility. Hallahan and Kauffman (2003) have identified levels of intervention from the most integrated to the most segregated. The most integrated is the regular classroom with instruction provided by the regular classroom teacher. At the next level, the regular classroom teacher may work with a special educator or other professional (e.g., school counselor) who consults with and/or provides the teacher with appropriate resources and demonstrates or gives guidance in the use of alternative instructional strat-

egies, materials, or equipment. If further services are needed, students may receive direct services from the special educators who visit several schools and classrooms within those schools to instruct individuals or small groups within the classroom setting and continues to provide additional resources for the time when they cannot be there. At the next level, a resource teacher works with individuals or small groups in a special classroom for some designated part of the school day, but still serves as a consultant to the regular classroom teacher on resources and materials to use. More severely impaired students may require hospital or homebound instruction. This is most often required by students with severe physical disabilities or emotional or behavioral disorders, is usually for a short period of time, and regular contact continues between the regular classroom and the special educator to ensure smoother transitions back to the classroom. At the next levels of service, exceptional students are not served in the regular classroom. These arrangements include special self-contained classrooms where a child spends all day or nearly all day with other exceptional students, special day schools that are distinguished by special facilities, and residential schools. The range of arrangements is called a continuum of alternative placements. The concept of least restrictive environment is used to guide the decision as to which placement is most appropriate. Least restrictive environment implies that the student should be integrated with the nondisabled in the classroom, home, family, and community as much as is feasible; that the student's life should be as normal as possible, and the intervention should provide for meeting the student's educational needs with minimum interference with individual freedom.

A central feature of PL 94–142 and the Individuals with Disabilities Act (the replacement for PL 94–142 passed in 1990 and amended in 1997) was the requirement that every exceptional student in need of special education must have an individualized educational plan (IEP). This written plan must be approved by the student's parent or guardian and must include: (1) a description of the student's current level of functioning, (2) statements of annual goals, (3) short-term instructional objectives and benchmarks that indicate progress toward achieving those goals, (4) descriptions of the special services to be provided and indications of the degree to which a student will

be part of the regular education program, (5) a clear statement of the plan for starting services and the duration of the services, and (6) a plan to evaluate the effectiveness of intervention. For older students, the IEP must include a description of how the student will make the transition from school to work or higher education.

In addition, the federal legislation regarding provision of services requires that all children with disabilities will in all cases be provided with a free, appropriate public education (FAPE) without cost to parents and at a level appropriate for the particular student. This requirement has had significant impact in not allowing schools to exclude or deny educational options to students with disabilities on the grounds that the school did not have services available.

The Individuals with Disabilities Act (IDEA) also states that students with disabilities should be removed from the general education classroom “only when the nature and severity of the disability is such that education in regular classes with the use of supplemental aids and services cannot be achieved satisfactorily.” Passage of these acts led to great controversy surrounding the use of the special self-contained classroom and to widespread implementation of the practice of mainstreaming for those students with moderate or mild disabilities or handicapping conditions and led to the inclusion movement in special education.

GIFTED EDUCATION

Gifted was defined by Lewis Terman (1926) in the early studies of giftedness as those individuals with IQs greater than 135. Some authors further discriminated between moderately gifted students (IQs between 130 and 150) and profoundly gifted students (IQs greater than 150). While IQ scores and general intellectual ability continue to dominate definitions and assessment of giftedness in practice, the definitions of gifted in the literature have been expanded and modified in response to criticisms that traditional IQ tests fail to assess a broad array of human abilities or to predict exceptional performance in many of the areas valued by society, including creative performance. Many definitions of giftedness have reflected changes in conceptions of intelligence and the recognition of the limitations of a narrow conception of giftedness.

For example, the first federal definition of gifted (Marland 1972) included general intellectual ability as one area of giftedness, but expanded the definition to include specific academic aptitude, creative or productive thinking, leadership ability, visual and performing arts abilities, and psychomotor ability. Most states have adopted this definition or the later revisions. The most current definition of gifted and talented students reads: “The term ‘gifted and talented students’ means children and youth who give evidence of high performance capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who require services not ordinarily provided by the school in order to fully develop such capabilities” (U.S. Department of Education 1993). The major difference between the earlier federal definitions and the current definition is the elimination of the category of psychomotor ability. Because of the evolution of the definition of giftedness from the IQ tests based on a normal distribution of scores, the incidence of giftedness is generally stated as between 3 and 5 percent of the population. Reliance on standardized assessments in the identification of gifted students has resulted in underrepresentation of minorities and children from lower socioeconomic groups in gifted programs. Accordingly, much attention has been directed recently at efforts to encourage talent development in the primary grades and the development and use of nontraditional assessments.

Joseph Renzulli (1978) criticized the federal definition for its artificial categories (asking how one can be creative outside of specific fields) and its failure to include all of the traits necessary to describe gifted behavior. Based on his analysis of the characteristics of creatively productive adults he offered a “three-ring definition” of giftedness. In his definition gifted and talented children possess above average ability, high levels of task commitment (bringing to bear a passion for productivity in a particular area), and high levels of creativity. When the individual has these three clusters interacting in the same performance domain, gifted behavior occurs. However, Renzulli recommends identifying students with above average ability and creativity in many general and specific areas and then providing learning activities in the areas of high interest for the child to bring out and nurture the task commitment as well as further the development of the abilities and creativity.

Renzulli (1977, Renzulli and Reis 1985) is also recognized for making one of the major contributions to curricular and programming recommendations for the gifted. Based on his model of giftedness, he developed a model that provided Type I activities as high-interest enrichment for students to use to explore areas of study outside the traditional curriculum and to invite those with task commitment to further study in that area, Type II activities which were oriented toward helping students develop the processing skills necessary to be creatively productive, and Type III activities in which students worked on real life problems to produce solutions that have real life audiences. The goal was to guide high-ability students to be producers of knowledge rather than consumers of knowledge. Identification in this model became known as a Revolving Door Model in which a fairly large “talent pool” (up to 20 percent) of high-ability students would participate in Type I and Type II activities and then “revolve” into the most intensive services when they are able to identify and commit to the completion of a Type III project. This model evolved into the Schoolwide Enrichment Model in which Type I and Type II activities are offered in every class in a school as a means to develop potential abilities and interests.

Renzulli (Renzulli and Smith 1978) was also noted for incorporating the instructional strategy of compacting into his model. Compacting is a process in which teachers pre-test high-achieving students prior to beginning a unit of instruction to determine which objectives the students have already mastered or identify areas in which quick mastery of new ideas is likely. The already mastered learning is eliminated from the instruction for these students and other objectives are addressed through accelerated instruction. The process of compacting “buys time” for student to engage in the enrichment activities offered. Research suggests that this process can be used to eliminate 40–50 percent of the content for high-achieving students with no loss in achievement gains (and some greater achievement in science) compared to a control group.

The issues of providing curriculum for gifted students have ranged from debate of the relative merits of acceleration or enrichment of curriculum to the appropriate emphasis on process dimensions versus product dimensions of curriculum. The acceleration of gifted students has taken on many forms. Students may be admitted to kindergarten

early, may skip grades, may go to more advanced classes for instruction in a particular discipline (e.g., going from a first grade classroom to a third grade classroom for mathematics instruction, and/or entering college early). The arguments against acceleration have focused on the fears of social or emotional difficulties that may result from being removed from same-age peers. The research suggests that when acceleration is implemented with students whose needs clearly suggest that this modification in their school program is warranted, when careful monitoring and support are available, and when the practice is flexible, the students have been successful with no indication that social or emotional problems are an expected outcome.

Common administrative grouping arrangements for gifted students include self-contained classrooms (either within a school or as part of a special school), special instruction in resource rooms for some period of time each day or each week, and curriculum differentiation within the regular classroom setting. There are many arguments presented for and against each of these models. The arguments for self-contained classrooms include the importance of providing instruction at an appropriate level of challenge all day, the benefits for gifted students of being able to interact with intellectual peers, the need for specially trained teachers, and the need for specialized resources. At the high school level, the argument for specialized resources is particularly relevant in the creation of special schools of science, mathematics, and technology. Arguments against self-contained classrooms include the problems of elitism that may evolve among the students. The pull-out program advocates note that this arrangement allows for the gifted student to be both in the regular classroom with same-age peers and in the gifted resource room with specially trained teachers and intellectual peers with opportunities to engage in activities that the regular classroom teacher has neither the time nor the resources to create. The nonintegrated nature of the curriculum that has traditionally been offered, the disruption of classrooms, and the argument that gifted students need a challenging curriculum more than a few hours per week are offered as reasons that this alternative is not satisfactory. Differentiation in the regular classroom has become an increasingly popular model because of the opportunity for differentiated curriculum throughout the school day.

The lack of skill and will to differentiate curriculum for the gifted, combined with the many pressures of high-stakes testing and the inclusion of other children with exceptional needs in the general classroom, make implementation of this model difficult.

The curriculum to be offered to gifted students, regardless of setting, must be created by the teacher of the gifted student based on the beliefs of the school about the important goals for gifted programming. Many models of curriculum have been offered. Early models tended to emphasize the process-oriented curriculum that emerged from the study of creativity and intelligence by J. P. Guilford (1967) and the Taxonomy of Behavior Objectives developed by Benjamin Bloom and his colleagues (1956). For example, Mary Meeker (Meeker 1970; Meeker and Meeker 1985) developed instructional activities to match the dimensions of the Structure of Intellect Models with particular emphasis on the development of divergent thinking skills (generating many solutions to a given problem) with the goal of developing creativity. The Enrichment Triad Model and Schoolwide Enrichment Model offered by Renzulli (1977, 1985) moved the emphasis to more product-oriented curriculum with greater emphasis on the disciplines and productivity that emulated that of adult gifted productivity. More recently, the differentiated instruction model offered by Carol Tomlinson and the Parallel Curriculum Model developed by Tomlinson, Kaplan, Renzulli, Purcell, Lappien, and Burns (2002) both reflect a strong emphasis on curriculum designed to address high content and discipline standards and create challenges for gifted students by building on and extending the core curriculum. Learning activities and instructional units are developed by extending the intensity of challenge along a continuum leading toward expertise in learning and the disciplines.

Carolyn Callahan

INCLUSION

Few educational topics have generated the heated discussion that has surrounded the movement to include students with disabilities in general education classrooms. This movement originated in response to frustration over the ways in which educational

services were being provided to special education students. The first attempts to serve students who were identified as needing special education services were largely structured to separate these students from the general population. Special education students were served in self-contained classrooms, often in separate buildings or sections of buildings. The alternate programming arrangement used to serve them was the resource room. Students would be assigned to a regular heterogeneous classroom and then leave the room for a designated part of the school day to meet with a specialist. The special education teacher would address the student's deficiencies in achievement through direct curricular modifications or would provide instruction in coping strategies that would assist in the learning process.

Both the special education self-contained and resource rooms were severely criticized educational options during the 1980s. They were criticized for the stigmatization that accompanied the assignment to the special class or the departure to attend a special class that was obviously for remediation. Advocates for these children also noted that instruction in special education segregated classes never afforded students the opportunity to interact with and learn the social skills of interacting with students without disabilities. The departure from the regular classroom also reduced the opportunity for the child with a disability to participate in the same learning opportunities available to other children. Most importantly, from the perspective of advocates of inclusion, special classes often failed to meet the high standards mandated by P.L. 94-142. The curriculum in the special classes and resource rooms was characterized as a set of disjointed activities that failed to coordinate with regular classroom goals or result in a cohesive curriculum. Advocates of inclusion also argued that the curriculum was mired in basic literacy and numeracy skills, lacked the richness of the general education curriculum, and failed to introduce or help students develop higher-level cognitive skills. A further contributing factor to negative perceptions of these administrative options was the fact that disproportionate numbers of students who were from racial/language minority groups or were from low-income families were identified for special education services, thus creating segregated instructional groupings. Hence, advocates called for greater integration of the special education student into the general education program.

Two parallel reform movements have been associated with the inclusion movement. First is the Regular Education Initiative which largely addressed the needs of students with mild disabilities such as learning disabilities and called for a merger of general education and special education to address the needs of these children and other children who were deemed at risk within the regular classroom with little or no segregation. However, there was a second movement aimed at changing the pattern of segregation and isolation of students with more severe disabilities. Advocates of these children focused on inclusion as the goal of special education and the full realization of the least restrictive environment mandate of PL 94-142. Inclusion refers to educating students with disabilities—regardless of severity—in general education classrooms for most or all of the school day. It is based on the tenet that students with disabilities have a right to participate fully in the general education classroom with peers of the same age. Advocates of these children were successful in incorporating language in the federal law which provides funding for special education students that called for these children to be provided educational interventions in “the least restrictive environment.” From this provision stemmed the impetus to bring special services and the support for all special need children into the regular classroom.

Critics of the inclusive school movements acknowledge the criticisms offered of past special education practice, but they also claim that there are limits on how resourceful and responsive the general education teacher and classroom can be. They maintain that the full continuum of services model is better suited to meet the diverse needs of exceptional students. The debate has not been resolved despite studies of such variables as teacher attitudes and achievement outcomes. The only consistent finding of the research is the conclusion that students without disabilities seem to benefit academically from being in inclusive classrooms.

The debate around inclusion has also affected the services provided to gifted students. In early programming efforts, gifted students were often grouped in homogeneous classes or they were served through resource-room arrangements where they might be pulled together for some period of time each week (normally a very limited one to two hours per week). The gifted self-contained classrooms and resource rooms were criticized on other grounds. The self-contained classrooms were viewed as elitist and those opposing this grouping arrangement cited the literature that claimed that grouping resulted in detrimental achievement effects for low and middle groups. The resource room was criticized for offering enrichment options that were not rigorous and challenging and not a true extension in depth and complexity of the required curriculum. Second, many questioned the impact of the very limited time period. The result was a call from some educators to integrate the gifted into heterogeneous classrooms and to eliminate the enrichment class options. The advocates of these positions claimed that integration of the gifted into the heterogeneous classroom with differentiated services within that setting would provide for a more equitable class arrangement and, further, that gifted students could then benefit from provision of an appropriately differentiated curriculum for the majority of their school day rather than just several hours per day. The contrary argument is made that the regular classroom teacher has neither the skill and training nor the time to develop the curriculum appropriate for these high-end learners. These opponents to full inclusion of gifted students claim that the interpretation of least restrictive environment for gifted children should not parallel that used for children with disabilities. No research has demonstrated the advantage of inclusion over separate classes or resource rooms for gifted students or their classmates.

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INCLUSION OF CHILDREN AND YOUTH WITH SEVERE DISABILITIES IN SCHOOL AND SOCIETY

Persons with severe disabilities are those who need the most extensive instruction, adaptation, and assistance in order to perform and/or participate meaningfully and productively in everyday life activities of the home, community, and workplace. These individuals may experience one or more significant intellectual, physical, sensory or emotional disabilities. Under traditional classification systems severe disabilities usually refers to the presence of mental retardation, developmental disabilities, autism, pervasive developmental disorders, multiple disabilities, traumatic brain injury, or deaf-blindness. It is important to note that a diagnosis of any of the above does not necessarily mean that a person will be severely handicapped. Rather, individuals with severe disabilities constitute a subset of those diagnosed (the vast majority of individuals with mental retardation experience the need for only limited supports and are generally able to function independently in society's mainstream). It is estimated that persons with severe disabilities constitute approximately 1 percent of the general population.

The group of individuals generally regarded as having severe disabilities is very heterogeneous with a wide range of physical, behavioral, and learning characteristics. The concept of "severe disabilities" grew from the primary advocacy, professional, and research organization The Association for Persons with Severe Disabilities (TASH) during the mid-1970s. TASH developed in response to litigation and legislation establishing legal rights to education and other services for individuals with severe disabilities who traditionally had been excluded, segregated, and otherwise denied the right to access

education and to participate in mainstream American society.

During the Kennedy administration in the 1960s public awareness of individuals with mental retardation and other severe disabilities was heightened by the formation of the President's Committee on Mental Retardation, which provided an impetus for research, development, and training. At that time most families either had institutionalized their child with severe disabilities or kept the child at home because there were no educational or rehabilitation services available. As a result of the Kennedy administration and the growing national advocacy of organizations such as The Association for Retarded Citizens and United Cerebral Palsy, Congress began to authorize funds to support education and treatment programs.

Also at this time, a number of exposés in the national media cast light on the horrible conditions in large residential institutions where many children, youth, and adults lived. Burton Blatt and Fred Kaplan (1974) published "Christmas in Purgatory," a photographic documentary of life in institutions, and Geraldo Rivera captured the deplorable conditions at Willowbrook, a large institution in New York, on video tape and it was seen on national television. These exposés and others shocked the nation and rallied parents and advocates into political action.

During the same period, Wolf Wolfensberger (1972) and other writers from Scandinavia (which was far advanced in the humanistic treatment of persons with disabilities at that time) began to articulate the principle of "normalization" which affirmed the right of all persons to a dignified life. The normal-

ization movement began as a foundation for attempts to improve the living conditions and quality of life in institutions and eventually evolved into the deinstitutionalization movement which saw thousands of persons with severe disabilities exit institutions to live in mostly smaller, more normal, familylike community residences. As the depopulation of institutions continued there was increased pressure on government to fully enfranchise these new community members who still were unable to access public education and had only meager “church-basement programs” sponsored by parents and advocacy organizations.

Everything changed in 1971 with the issuance of Judge Becker’s ruling in the class-action case *The Pennsylvania Association for Retarded Children, PARC vs. Pennsylvania*, heard in federal court in Philadelphia. An excerpt of Judge Becker’s decision is as follows:

It is the Commonwealth’s obligation to place each mentally retarded child in a free, public program of education and training appropriate to the child’s capacity, within the context of the general educational policy that, among the alternative programs of education and training required by statute to be available, placement in a regular public school is preferable to placement in a special public school class and placement in a public school class is preferable to placement in any other type of program of education and training.

Becker ruled in favor of the plaintiffs, who were parents of a class of children with mental retardation. Based upon the *Brown v. Board of Education* Topeka Kansas case in 1954, the PARC plaintiffs argued and won the right to education for their children. Known as “The Right to Education Case” PARC opened the door to a flood of litigations, state laws, and funding for programs for children and youth with mental retardation and other disabilities.

The next important chapter in the history of treatment and services for persons with severe disabilities was written by many of the same parent advocates from the PARC case. Together with politicians and educators, they took their case to the United States Congress where in 1977, after years of lobbying, the *Education for All Handicapped Children Act* (PL 94–142) was signed into law by President Nixon. Though

not a civil rights act, PL 94–142 made federal funding for special education contingent upon states’ compliance with regulations set forth in the law. The law required: (1) a free appropriate public education, (2) an education provided in “the least restrictive environment,” (3) an individualized education developed in an individualized education plan (IEP), (4) nondiscriminatory evaluation, (5) due process procedures to settle disputes between parents and the schools, and, importantly for children with severe disabilities, (6) a policy of zero rejection. The intent of the law was clear:

To the maximum extent appropriate, handicapped children, including children in public and private institutions or other care facilities, are educated with children who are not handicapped, and that special classes, separate schooling, or other removal of handicapped children from the regular educational environment occurs only when the nature or severity of the handicap is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily.

During the ensuing decade, special education and rehabilitation programs flourished and proliferated across the nation, including public school and community services for children, youth, and adults with severe disabilities. However, even though the PARC case ruling and PL 94–142 provided mandates for the inclusion of children with severe disabilities, most were educated in separate schools or in separate classes in regular schools.

Another important law, passed in 1990, was the *Americans with Disabilities Act* (ADA), a civil rights law that prohibited discrimination against persons with disabilities in employment, public services, transportation, and telecommunications. This law affirmed the right of all Americans to access to many of the same aspects of life as those without disabilities. Perhaps the most important impact of the law was in employment, where hiring practices were required to provide opportunities to persons with disabilities who were otherwise qualified.

In 1997 the movement toward inclusion of children and youth with severe disabilities was given new life with the reauthorization of PL 94–142 into the *Individuals with Disabilities Education Act* (IDEA). IDEA contained new provisions requiring

schools to address transition from school for adolescents and much stronger requirements for inclusion. The law also now required that students with disabilities have access to the general education curriculum and participate in district and statewide assessments. These provisions ensure new levels of accountability for a quality education for all students and strengthen the imperative to include students within general education classrooms and schools. Relatedly, the new “no child left behind” regulations require that school districts report levels of participation of students with disabilities in district and local assessments. Additionally, all students’ scores are to be included in aggregate district and state assessment results. These provisions include assessment data from students with severe disabilities, many of who take an alternate form of the assessments. The importance of these provisions lies in the fact that the achievement of students with even the most severe disabilities is now part of the overall performance and accountability of a school and a school district, whereas in the past this has not been the case. As a result, schools and districts will need to be concerned about high expectations for achievement even for these students.

Over the past thirty years programs and services for children and youth with severe disabilities have changed dramatically. The field has gone from no services to segregated, limited services; to community-based services in separate schools and classes; to the present situation in which sweeping federal mandates not only provide strong support for access to and participation in general education classes and curricula, but also for access to most aspects of community life. These changes have been accomplished through many years of advocacy, litigation, and legislation and through various school-reform movements.

U.S. Department of Education statistics show that children and youth with severe disabilities increasingly are educated in regular schools and spend greater amounts of time in regular education classes being taught by general education teachers. All across the nation more and more students with severe disabilities are attending regular schools and classes where general education teachers are now required to participate in IEP meetings, adapt their curriculum and instruction, and manage a complex array of behavioral, medical, and other support needs of students with severe disabilities.

This chapter provides an overview of some of the most important areas relevant to the education of children and youth with severe disabilities. Ten areas of current best practices are discussed, each with an orientation toward providing a high-quality education utilizing inclusive practices. The first entry discusses the importance of parent and family involvement in the child’s education. Parent involvement for these children is especially important given the impact of the child’s disability on the family and the need to coordinate care and support practices between the home and school. Peer involvement and support is the subject of entry two, which provides a review of various approaches for organizing and supporting peers to participate and interact with children with severe disabilities. Research has shown that simply placing students with severe disabilities in physical proximity to nonhandicapped peers does not guarantee that interaction will occur. Communication and social interaction skills are also necessary for interaction to be fruitful for both students with severe disabilities and their nonhandicapped peers. Because students with severe disabilities usually do not acquire language in a typical fashion, alternative approaches known as augmented communication are necessary. Entry three addresses these issues. Entry four provides a description of methods and approaches for developing alternative ways these children can learn to communicate and interact with their peers.

Many times these students will exhibit social skills and behaviors that interfere with their learning and that of their peers. These challenging behaviors can be responded to through a process of positive behavioral support (PBS), which is delineated in entry five of this chapter. An alternative to more traditional behavior modification, PBS is used to develop a clearer understanding of the child’s interaction with their environment, the reasons why the child engages in the behavior, and possible interventions and supports which will be used to alleviate the child’s difficulties.

Entry six outlines the development and progression of approaches to assessment and curricula for students with severe disabilities and differences in content between the elementary and the secondary level. This entry also outlines how the *Individuals with Disabilities Education Act* and the *No Child Left*

Behind Act has affected assessment and curriculum development practices for teachers of students with severe disabilities.

For students with severe disabilities to receive a quality education using inclusive education it is also necessary that school and districtwide policies and practices be implemented. Entry seven discusses leadership, the development of a vision of inclusion, teamwork and collaboration, and district and school practices needed in order for inclusion to be effectively implemented.

The final three entries of the chapter deal with issues that confront these children and their families as they approach adulthood: developing choice and self-determination, the transition from school, and the adjustment to adult life in the community.

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FAMILY INVOLVEMENT AND SUPPORT

Parent and family involvement is critical to successful inclusion of children with severe disabilities. Families have much that is unique to contribute to the educational planning process. Parents know their child better than anyone and, therefore, are a valuable resource for helping others to learn about the child and his or her positive attributes, strengths, preferences, and needs. Parents and family members can provide a firsthand account of the child's developmental, communication, educational, behavioral, and medical treatment histories to help others to better know and understand the child's history and life experiences within the family, school, and community. Parents possess a wealth of information regarding what has and has not worked for their child and ways to successfully accommodate their child's learning and support needs. Only through input from and interaction with family members can educational personnel assure that instructional goals and methods are relevant for both child and family. It is parents and family members who can articulate a dream or vision of hope for their child that should guide the development of educational programs aimed at achieving those desired outcomes.

Often, it is the dreams and hopes that parents have for their child that influence their decisions to consider or seek inclusive educational opportunities. Many parents want their child to develop and maintain friendships and they believe that friendships are more likely to blossom in inclusive settings. Many parents express a desire for their child to be like other children, and they believe that specialized, self-contained settings emphasize their child's differences. Other parents want their child to develop to fullest potential. They believe that inclusive settings provide positive language and behavioral models as well as more frequent opportunities to practice and apply new skills. Parent (and family) involvement is a crucial component in the educational process, regardless of the preference for inclusive or other types of educational experiences for their child.

PARENTAL RIGHTS AND INVOLVEMENT

Parent involvement is one of the major provisions of Public Law 94-142. Subsequent amendments to the law extended services to infants, toddlers, and preschool children, and expanded and strengthened parents' roles in the educational planning process. The 1997 Amendments to IDEA provide for parent involvement via a number of protections and provisions. These include parental consent and due process. Schools are required to obtain parental consent before evaluating or reevaluating a child. Due process provides recourse for parents if they disagree with a school district about their child's eligibility, placement, program needs, or related services. The team process required by IDEA provides a mechanism for parental participation in eligibility determination, the development of the individualized education program (IEP), and transition planning. Additionally, IDEA requires that schools provide parents with regular reports of the child's progress in terms of performance on individual goals.

Under the current IDEA, parents of children of ages three to twenty-one are members of their child's school evaluation and planning teams. This means that parents take an active role as equal partners in the decisionmaking and IEP planning process. Rather than passively participating by providing consent to programs developed by professionals, or partially participating by providing information that professionals consider in the development of educational programs, parental in-

volvement means that parents actively contribute to the planning process by collaborating with the other members of the team.

IDEA also provides for early intervention services for infants and toddlers from birth to three years and offers supports and services for their families as well. Unique to early intervention is the Individual Family Service Plan (IFSP), which details the early intervention services that will be provided. Unlike the IEP, which focuses primarily on the educational and related service needs of the eligible student, the IFSP details supports and services provided to the child and family. The IFSP is framed by the family members' concerns and priorities for the child and their conceptualization of his or her strengths and needs. Family resources and strengths are considered as well, and the services to be provided are based on family-identified outcomes and needs. Early intervention services are intended to enhance the capacity of the family to meet the needs of the child. Like the individual education planning process for school-age students with severe disabilities, the development of the IFSP is conducted in a partnership between family members and professionals.

The family's involvement in early intervention services may influence their interest in inclusive educational settings once their child reaches school age. The law requires delivery of early intervention services in naturalistic settings or environments. These include settings in the home as well as community settings such as parks, playgrounds, day care, and so on, and activities in which the family and child regularly participate. By providing early intervention services in this manner, families are supported in learning and applying needed interventions in everyday routines and activities, where they will be regularly used. Segregated classrooms may not be as appealing to parents following their child's earlier educational experiences in typical settings in the community.

MODELS OF FAMILY SUPPORT

The individual family supports provided by early intervention services constitute a family-oriented or family-centered approach. In earlier or more traditional service delivery systems, professionals focused on the child with a disability. Even when programs examined family interactions or included families

in the planning process, the focus of intervention remained exclusively on the child. In family-centered approaches, the child is considered within the context of the family, which means assessment, planning, and intervention address needs and preferences of the family. Rather than intervene directly with the child, family-centered services focus on providing supports that will increase or enhance the capacity of the family to better meet the child's needs.

The family-centered approach is based in part on family systems theory. In family systems theory, the family is viewed as a sum of its parts; the family comprises a whole unit, which consists of individual parts, that is, individual family members. Family membership is an interdependent phenomenon. All family members are in some way affected by what occurs to each individual member. That which affects one part of the whole affects all. Therefore, when one of the members of a family is a child with a severe disability, supports and services must consider and respond to the effects on each family member and the family system as a whole.

There are a number of practices that characterize family-centered approaches. First and foremost, family-centered approaches provide support to the entire family. These supports are based on and are respectful of family choice and preference. Second, family-centered systems are flexible. Flexibility is necessary in order to remain responsive to the individual family, as well as to a broader constituency. Family needs change over time, as do the roles and responsibilities of its individual members. Families differ significantly from one another, and family-centered approaches respect these differences, responding to the individual family's unique needs and culture. Finally, family-centered systems encourage the use of generic resources, that is, those supports and services that are utilized by the general population and not limited to a group with particular characteristics, such as disability-only services.

Rarely are school-based services family centered. For this reason, school districts can experience difficulty conceptualizing and supporting inclusion for children with severe disabilities. Though IDEA addresses children's transition from early intervention to preschool and from preschool to elementary school, these transitions are not intended to influ-

ence change in district practices, but rather to help the child adjust, and to ensure the availability of needed services. Once in school, the child will still receive the same kind of service, but how that service is delivered may differ significantly from how it had been provided under the family-centered system. For example, in a family-based system, physical therapy will be provided, for the most part, in the home, while in the educational system, the therapy would likely be provided at school.

FAMILY SUPPORT

Parents of children with severe disabilities may be at risk for personal and family difficulties, and siblings may experience difficulties as well. These difficulties can be associated with a number of factors, such as the increased responsibilities involved in the child's care, constraints on time or opportunity to focus on other family functions, strain on financial resources, lack of support, and so on. Children with severe disabilities often require extensive parental support on a day-to-day basis in order to meet basic needs and participate in the everyday activities of daily living. In addition, parents and families must attend to the child's medical, educational, and therapy needs, as well as interface regularly with case management and school personnel. The increased responsibilities can be isolating or exhausting for families.

Families also need support and a wide variety of family support services can be made available to them. Family support services are those formal and informal services and supports utilized by the family while the child with the disability lives in the family home. Formal services include case management, in- and out-of-home respite, parent training (i.e., for specific healthcare routines), parent support and advocacy groups, family and individual counseling, structural modifications to the home (e.g., construction of a ramp), and a variety of other services as well. Some services are provided directly to the child with the intent of easing the burden of care and allowing families to continue to participate in family routines and activities (e.g., overnight nursing care is provided so parents can sleep through the night; therapeutic support services are provided after school so parents can prepare the evening meal or assist siblings with schoolwork). Funding for formal services

is generally provided by the public sector or private medical insurance.

Families also receive assistance from informal supports, that is, a social network of unpaid supports that can be provided by extended family members, friends, neighbors, and volunteers. Informal supports are just as important if not more important than formal services. Informal supports may more readily match existing family routines and ways of doing things, especially when they are provided by others who experience a close relationship with family members. The family may view informal supports as less intrusive or impersonal than formal services. Informal supports may be just as elaborate and time-intensive as formal services, but for some families they may be preferable to those provided by agencies and service personnel.

Informal supports can be used to effectively supplement formal services and help the family preserve its way and quality of life. It is important for educational personnel to understand the importance of informal supports and be willing to include them in the child's educational program if the family so desires. This also means that those who informally support the family may also participate as members of the child's educational team if the family requests this.

Family support needs change with the passage of time. A range of services is available to meet changing needs of children with disabilities and their parents and families. Younger parents or parents of young and school-age children may need to utilize babysitting services that are provided by highly trained caretakers. Parents of older children may require information as their son or daughter experiences puberty. As life expectancies of individuals with severe disabilities continue to increase, support services may be required to meet the unique needs of aging parent caregivers. Such support may be intermittent—for example, estate planning or consultation and training regarding competency and guardianship. Parents who have supports available to them will be better able to participate in their child's inclusion planning.

Other supports available include advocacy and networking groups. These provide parents with assistance from parents of children with similar concerns or issues. Members of parent network groups may provide information or assistance in dealing with

service agencies, IEP development, or the development of supports needed for inclusion.

SUPPORTING PARENT INVOLVEMENT

Because of the many demands on their time and attention, the parents and families of students with severe disabilities will often need support in order to participate consistently and meaningfully as a member of their child's educational team. Educational personnel must understand how the many constraints experienced by parents can pose significant barriers to parental participation, and they must be willing to adopt practices that support active parental involvement.

One means of supporting parent involvement is to provide information to parents about the array of options available to them and to their child. In response to the recognition of the need to support parental involvement, the revised IDEA of 1997 has provided for the creation of Parent Training Information Centers (PTIs) in each state. PTIs are part of a resource network whose purpose is to disseminate information and provide training on the IDEA to parents of infants, toddlers, and school-age children with disabilities. PTIs provide training to parents and teachers in order to help parents more effectively participate in shared educational and service planning; resolve problems between families and schools or other agencies; and facilitate in connecting children with disabilities to community resources that address their needs.

School districts can also support parental involvement by providing timely and well-organized information to parents. For example, providing parents with a school-year schedule or timeline of events related to special education is helpful to them in long-range planning. Parents of children with severe disabilities may need extended time to prepare information for IEP planning meetings or arrange for time off from work. Additionally, school districts can prepare fact sheets informing parents of the supports available to them from the school, community, and formal support system. School districts should be willing to disseminate information from other organizations and agencies that might provide assistance to parents as well.

Parents' participation in educational planning may

be compromised by easily overcome issues—such as the time or place meetings are held. When schools are willing to schedule meetings to accommodate parents' schedules and routines, parents may be able to more readily participate. Provision of childcare for siblings may also facilitate parent involvement as will arranging for transportation for parents who need it. School districts that are committed to ensuring active parent involvement in educational planning and decisionmaking will develop creative and effective ways of doing so.

Another way to support parental involvement in their child's educational team is to include them in teacher training and support efforts. Opportunities for parents and teachers to learn together can strengthen relationships and improve communication between them. Again, it is important to not only extend the invitation but to also provide supports needed so parents can participate. Finally, parents often express their frustration when professionals use technical language and jargon. Many parents report that they feel excluded when such terminology is used. School personnel must strive to use everyday language and avoid the use of acronyms, abbreviations, and buzzwords.

COMMUNICATING WITH PARENTS

It is generally accepted that successful inclusion of students with severe disabilities requires not just collaboration, but regular conferencing between the special and general educators and other members of the child's team. As members of the child's educational teams, as well as because they are the parents, it is imperative that schools engage in regular and effective communication with parents. The communication between school and parents may be initiated or coordinated by different members of the educational team, depending on the need or circumstances. For formal planning and educational decisionmaking, parents are contacted by whoever has been identified as responsible for coordination of the IEP process. This can be an administrator, such as a special education supervisor or director, a school psychologist or guidance counselor, or, as often is the case, the child's special education teacher. Communication that is intended to share day-to-day and routine information is generally initiated by the special education teacher. This includes

notices of school activities, permission slips, and weekly schedules. Communication concerning the child can be initiated by either the teacher or parent, but most often is built in as a part of the child's educational program. The most common form of regular communication between teachers and parents of children with a severe disability is a daily communication log. A daily log provides a means for the teacher to provide regular feedback to a parent regarding the child's performance or behavior each day, to report a problem that may carry over to the home, to ask questions or to express general concern, to send a reminder, or to share an anecdote or story about something that occurred during the day. Parents can use them for the same purposes, and often will use daily logs to provide alerts regarding the child's health, behavior, or affective state on that particular day. Daily communication logs are commonplace and can be an important source of information as well as a highly efficient and effective means for parents and teachers to regularly communicate. Such daily logs can impede communication between parents and teachers when they focus exclusively on negative student behaviors; are used primarily to report problems; are too brief; are too lengthy, or require either the teacher or parent to spend excessive amounts of time responding to questions and concerns.

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PEER INVOLVEMENT AND SUPPORT

Examination of the critical involvement of peers in the successful inclusion of students with severe disabilities, and the supports required for inclusive education, is best understood from an educational and developmental level perspective. As the educational experiences of all students within general education settings change (i.e., from elementary to middle to secondary school), the expectations for peer involvement and the necessary supports must undergo change as well. As a result this topic is organized by educational levels and concludes with a summary of current best practice.

EARLY INTERVENTION AND PRESCHOOL PROGRAMS

The inclusion of students with severe disabilities had its beginning at the preschool level, and the research regarding socially inclusive programs at this level is more abundant and longitudinal. Initially many relationships at this age appear to be primarily based upon proximity and valued objects, suggesting opportunities for interaction could be easily accommodated by adapting the environment in a physical manner. The nature of social interactions among preschoolers allows adults to utilize simple interventions to assure the inclusion of all students. As a result associations between children with disabilities and classmates may occur in inclusive settings without formal interventions. Additionally, at the preschool level more emphasis is placed on pre-academic and play activities rather than on academics. Social play activities are more easily adapted and require less sophisticated cognition in order for the children with severe disabilities to participate. This may explain why teachers of younger students tend to be more optimistic when surveyed regarding positive outlooks for friendship development among students with and without disabilities.

Early emphasis was placed on simply teaching nonhandicapped students to prompt and reinforce the pro-social behaviors of their peers with disabilities. This reinforcement, however, did not result in increased interactions across settings. The approach is noteworthy because previous approaches with older students focused primarily upon the instruction of remedial social skills to the students with disabilities, not recognizing the social reciprocity in the students' natural environment.

In order to increase peer interactions, sociometric ratings have been used to identify several target behaviors for future curriculum consideration. The highly rated students of preschool age demonstrated a willingness to share materials, assist others with tasks, display affection, and respond to social initiations by peers in a positive fashion. Students with disabilities who were given lower sociometric ratings displayed many more negative interactions than their peers. Simple peer-mediated intervention that involved teaching students to suggest various play activities, offer to share desirable objects, and to pro-

vide assistance during play increased the positive social interactions among students with and without disabilities.

In summary, recognition of the interactive nature of the goal of social inclusion suggests the provision of reciprocal instruction to assure that the social initiations of students with disabilities be noticed and responded to appropriately. Questioning whether or not preschool children are able to interact in this fashion independently resulted in the initial attention on preschool students without disabilities. Types of interventions utilized at this age have been categorized based upon the source of the reinforcement maintaining the target behaviors. Peer or student-mediated interventions involve the use of skills specifically taught to students to increase social interactions. Adult-mediated interventions refer to the provisions of reinforcement by the adult in the setting in order to increase the interactions among students with and without disabilities.

The young child's dependence upon observable, concrete information indicates the need for providing direct information regarding students with disabilities, in order to explain observed traits that could set them apart. Ignored differences have the potential to separate some children from their peers. An open discussion regarding every child's strengths and needs may help students to realize how much they have in common.

While very young children may not naturally consider the viewpoints of others, certain experiences may accelerate their ability to put themselves in a classmate's shoes. Role playing, which children this age typically enjoy, could provide meaningful insight for children and carry over to their interactions with other children. Awareness of an individual student's particular personality style and careful planning of interactive opportunities may also be indicated to assure greater success.

Inclusive preschool program teachers should also consider the age-appropriate gender preferences of their students. During the preschool years companionship is sought regardless of gender suggesting that included students should be given the opportunity to interact with all of the students in the setting, regardless of gender. This comprehensive approach also recognizes the limited social skill level of all children at this age; however, friendship remains a reciprocal endeavor throughout life.

ELEMENTARY LEVEL PEER INVOLVEMENT AND SUPPORT PROGRAMS

As the inclusive philosophy has gained acceptance, several means of facilitation involving peers have become prominent at the elementary school level. These facilitation programs are encompassed by two general approaches, which may be described as those created specifically to bring students together and those which attempt to encourage relationships in a more natural way. Special programs are summarized below.

Circle of Friends

The Circle of Friends approach is a formalized peer support technique that involves several peers, rather than focusing on dyads. This approach has been most often utilized with younger children, but need not be limited to elementary settings. Nondisabled peers are asked if they would be willing to join or create a "circle," which meets regularly under the tutelage of a facilitator. The members of the circle are committed to caring about, and becoming involved in, the lives of their classmates with disabilities.

The Circle of Friends can also bring together family members, family friends, general and special educators, the student, and the student's friends to plan for full inclusion. This group meets several times, answering questions regarding the needs to be addressed by the individual education plan and friendship facilitation. The concept behind the Circle of Friends strategy has also been broadened to prepare individuals for full community inclusion.

Cooperative Learning

Cooperative Learning first gained prominence in school curricula to promote interactive learning among regular education students of varying ability levels. This method provides for small groups working together to accomplish shared goals in a cooperative structure, rather than the traditional competitive structure.

Each group member is given a very specific role to play and is held accountable. Whether the physical proximity and interaction that group work affords results in an increase in acceptance, or an

increase in rejection of students with severe disabilities by their peers without disabilities, depends largely on how these situations are structured. Teachers can design these cooperative situations in order to achieve positive goals of interdependence, versus the negative outcomes that may result from competition in the classroom. Because the groups are heterogeneous and small, opportunity to interact is greatly increased. Positive interpersonal skill development is also a goal of this approach. Some cooperative learning models are very structured, specifically defining members' roles, and subsequent reinforcement; however, minimal accommodations may be sufficient to allow for the inclusion of students with severe disabilities. Structuring such cooperative activities in the classroom may be the most naturalistic technique to promote friendship among students with and without disabilities in inclusive classrooms.

Peer Tutoring Programs

Peer tutoring programs were originally utilized in both elementary and secondary schools in an effort to lower the pupil-teacher ratio among the regular education population; however, more recently they are being advocated as a means to promote interaction between students with and without disabilities in the inclusive setting. The peer tutor receives training in the provision of instruction to the student with a disability. The resultant role of the tutor closely parallels that of a teacher.

While such programs have reported universal acceptance among educators as a natural pathway to social relationships among students, others have questioned the use of peer tutoring to facilitate friendships, a purpose for which the program was not designed. Peer tutoring has been criticized for being overly formalized and for imposing new hierarchical roles on the peers involved.

Peer Buddies

Programs that organize peers to assist students with severe disabilities with less academically focused tasks than tutoring are typically referred to as *peer buddy programs*. Peer buddies accompany students with severe disabilities during activities such as lunch, assemblies, extracurricular activities, and so forth. The hierarchical relationship is less evident than the

teacher-student relationship characteristic of peer tutoring. Peer buddies may help students learn appropriate ways to interact socially, and to participate in extracurricular activities.

Encouraging Relationships Naturally

One of the concerns with artificially designed programs, using volunteers to befriend students, is the fear that the relationships that result are unlikely to endure. This concern has led to the examination of more natural ways of relationship development among children with and without disabilities. Principles and practices need to be applied which develop accommodations, adaptations, and social support of students with severe disabilities enabling them to be a friend, even though they may never display some expected social behaviors, or communicate in the same way as their nondisabled peers.

As elementary students grow older and social interactions become more complex, the use of intervention packages is recommended. Intervention packages are comprised of sets of strategies designed individually for each student with disabilities. Information should be presented to classmates about communication systems, adaptive equipment, and educational activities of the student with disabilities within naturally occurring interactions. Various methods should be identified that can serve as a basis for social exchange. Ongoing facilitation by the education staff of social exchanges between students with disabilities and others is also recommended in a multiple strategies plan.

Relationships may also be encouraged by utilizing specialized curriculum designed to build a classroom community conducive to friendship development. Specific lessons may address topics such as belonging, keeping friends, including everyone, cooperating, and others. Observational data regarding interactions of students with and without disabilities in the regular classroom setting are also helpful in examining natural methods of friendship facilitation. Consistent encouragement provided by the teacher, the classroom climate, and the instructional practices comprise the multiple strategies approach to facilitating social inclusion in a natural setting. The increased reciprocity of friendships suggests the need to both educate the general education students regarding their expectations of students with severe disabilities, and to design specific programs for

students with severe disabilities addressing interactive skills and necessary adaptations.

SECONDARY LEVEL INCLUSION APPROACHES

The social inclusion of students with severe disabilities in the secondary school setting is generally considered to be a more difficult process than that experienced during the preschool and elementary school years. Increased focus upon academic achievement and the preparation for postsecondary education as well as the departmentalized organization of most middle/junior and senior high schools may seriously complicate efforts to include students with severe disabilities at this level.

Peer Tutoring and Peer Buddy Programs

The peer tutoring and buddy programs described earlier are common strategies at the secondary level as well. Peer tutors provide instructional support, needed assistance, additional direct instruction, and training in communication. At this level many peer tutor programs are offered as graded elective courses for credit, and many secondary students are very comfortable in this role. Once again these interventions invite the criticism that such a hierarchical system reinforces status differences among students, and is not naturally interactive.

Group Formation

Strategies that allow students to interact as peers, without one student adopting a superior or helper role, requires a systemic paradigm shift. Friendship development is thought to be influenced by images of similarity, the opportunity to interact, and the ability to initiate and maintain social interactions.

To promote the recognition of similarities, the formation of groups around specific characteristics and interests provides students purposeful access to one another. The group's purpose and activities should be determined solely by the members in order to allow natural interactions. Students may participate in the design and implementation of social skills interventions to promote greater social inclusion of their classmates. This method places the students themselves in the role of expert regarding the

development of their existing friendships, and attempts to make use of this unique expertise. Friendships can be developed while social competence is systematically increased in natural contexts.

FACILITATION APPROACHES FOR ALL SCHOOL-AGE INDIVIDUALS

A peer support network for all school-age students may take the form of a welcoming committee, group leisure time, or school-sponsored clubs involving students with and without disabilities. Parental involvement and provision of support by staff or personnel are important components of any group approach. Facilitation of friendship development needs to be part of a broader values-based, system-wide undertaking. Too much control often results in formalizing relationships that are naturally informal. Small settings are favored over larger settings because they increase the involvement of all students. Interventions should strive to purposefully tap into the social skills of the students involved in order to promote favorable and natural outcomes. A systemic, multifaceted approach at all grade levels is clearly the most comprehensive means of addressing peer involvement and support of social inclusion in the true sense.

Perspectives of Nondisabled Peers

The goal of natural interaction among students requires serious recognition of the needs of both the student with disabilities and those without disabilities within the design of a successful support system. The critical role of the students without disabilities can no longer continue to be overlooked if the ultimate indicator of success involves their motivation to forge new relationships and friendships. Open recognition of the differences among all students is required to achieve inclusion beyond sharing the same physical space. In other words, approaching inclusion in the same fashion as other diversity issues such as multiculturalism, alienation, and underachievement is proposed.

In preschool, interaction may be temporarily encouraged by providing a student with severe disabilities an attractive and desirable toy; however, as the students grow older, the social supports provided should be continually checked against the age-appropriate expectations of their peers. Likewise,

general education students need to be exposed to activities that promote their social development, and are congruent with their current social-cognitive abilities. It is not enough to expect students to interact in a desirable fashion because it is the right thing to do, or conversely to sell short the students' capability to understand the position of others.

Studies have provided insight into many issues related to peer involvement and support in inclusive education. For example, both the gender of the students without disabilities and the level of contact with students with severe disabilities are significantly related to later attitudes towards people with disabilities. Students who experienced the most contact with the students with disabilities in the past were more accepting of individuals with disabilities when interviewed later. Females were found to be more accepting of individuals with disabilities than males regardless of the level of contact they had experienced. Many elementary school relationships are not maintained throughout secondary school due to systemic issues that separate students who once spent most of their school day together. If nondisabled students are active participants in the design and implementation of interventions for specific situations, such as transition between classes and lunchtime, their investment in the success of these strategies may be increased. The novelty of inclusion has been observed to wear off as the school year progresses and the students with disabilities are likely to be treated more and more naturally by the nondisabled peers.

Current Implementation of Best Practices

Examination of several specific strategies results in the following suggestions for planning programs intended to promote peer interaction. Repeatedly, ability awareness has been cited as an early requirement for program planning. The means of providing awareness information should follow age appropriate practice. For example, young children can be easily introduced to awareness issues through the use of literature. Such knowledge is empowering to students and should be accompanied by active facilitation of social interactions and consistent encouragement from adults in the setting.

Building a sense of community in the environment and modeling acceptance are ongoing requirements for success. If incorporated as a comprehensive meth-

odology, the program becomes an integral part of a broader values-based, systemwide undertaking that will consistently strive to provide the most natural foundation for relationships to develop. In the past, the social-developmental needs of the students without disabilities had not routinely been considered in planning inclusive experiences. Because their critical role in successful program development cannot be overlooked, the needs and goals that motivate nonlabeled students to become active participants in these practices must be addressed.

While the point has been made that teaching social skills to students with disabilities is an inadequate approach used alone, it remains a vital part of the combination of strategies required to increase likely success. Functionally, social goals may be facilitated by organizing small groups to discuss similarities and differences among students and allowing students to make suggestions that could help their classmates with disabilities feel more a part of the school. The active assistance from adult facilitators requires educational and leisure time together within and outside of school, where behaviors can be both modeled and reinforced. Parental involvement and the provision of support for staff and personnel are important components of a comprehensive approach as well.

NATURAL SUPPORTS BEYOND SCHOOL

In order to plan for continuation of natural supports for social interaction beyond the school environment, the normative processes in place must be observed and setting-specific problem solving incorporated. Use of creative planning, which begins with the individual's ultimate goals and works backward, is suggested. This results-oriented method aligns well with IEP planning by beginning with long-range future goals and identifying the steps necessary to attain those goals, which would most certainly include the development of meaningful social relationships and friendships.

Searching for simple strategies to address such a complex process is certain to be unsuccessful and detrimental to real progress toward the goal of social inclusion and friendship development. Such efforts, however well intentioned, are making a false promise of friendship that can never be guaranteed or predicted. Addressing the social-cognitive needs of the individuals with and without disabilities may hold one key to

developing the optimum breeding ground for the growth of genuine and lasting inclusion. Both the gender of the students without disabilities and the level of contact experiences during the school years have been shown to be significantly related to later attitudes towards people with disabilities. In other words, students who experience more contact with students with disabilities are more accepting of individuals later in life. This finding alone should motivate educators to promote the development of comprehensive inclusive cultures within their schools in order to positively impact greater acceptance in the community setting and society at large.

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INTERACTIONS AND FRIENDSHIP DEVELOPMENT

Traditional friendships are defined by several components that typically include enjoying one another's company; being of use to one another; and sharing common interests. Such relationships cannot be forced but may require intentional facilitation in inclusive settings in order to allow students to reach beyond barriers that have resulted from the social distance at which students with disabilities had been kept for many years. Inclusive practices allow students with and without disabilities to interact with one another. Parents of students with severe disabilities frequently report their desire for these interactions to develop further into friendships. *Belonging* is a term often used to describe the true membership of all students in the school environment that many believe is the ultimate goal of inclusive programming and a prerequisite for interactions becoming friendships.

Teaching social skills to students with disabilities, as a means of promoting the development of social interactions with nondisabled peers, has been a widely accepted practice. Such instruction is only one step in improving the social status of students with disabilities, however. Instruction of the child's nondisabled peers is also indicated, as noted earlier when discussing peer involvement and support. This

process should be as unobtrusive as possible and ensure students are then given the opportunities to connect with peers. Friendship facilitation is a combination of many strategies that build a climate of concern for others and an interest in promoting the development of social relationships.

The reciprocal nature of social interactions that can result in the development of true friendship requires attention to not only the social skill levels of the student with severe disabilities, but also awareness of the typical students' cognitive-social development. This understanding is necessary in order to successfully facilitate the growth of friendships among students with and without disabilities within the context of realistic expectations. The needs and interest of students without disabilities involved in inclusive programs may influence the quality of interactions among students and their future participation. Examination of typical social development may provide valuable insights for planning successful facilitation through the years. An image of similarity is believed to affect the probability of developing friendships. Opportunities to interact and discover these similarities students have to each other increase the likelihood of making friends. The ability to make social discriminations and to initiate and maintain interactions are also helpful and perhaps necessary in developing relationships.

SOCIAL COGNITIVE DEVELOPMENT DURING THE PRESCHOOL YEARS

Very young children have difficulty distinguishing between their own values and those of others. Friends are merely others who happen to be present and willing to interact. Proximity appears to be the key to interaction, which focuses upon objects and space rather than feelings. Conclusions drawn by children at this age are thought to most often be based upon physical characteristics, due to the child's reliance upon concrete and observable information. Peers are viewed only in terms of the child's own needs.

Focusing on the issue of gender, unlike older children, preschool peer friendships appear to seek companionship regardless of gender. In other words, students show little or no gender preference in playmates. Specific experiences are believed to accelerate preschoolers' ability to put themselves in a classmate's shoes. Such experiences may be promoted

by using role-play activities designed to provide meaningful insight for children.

Physical proximity and the use of valued objects are useful strategies in facilitating social interaction at the preschool level. In addition, positive behaviors should be modeled by the adults in the setting, and students displaying such behaviors on their own should be appropriately reinforced. When student social behavior is not positive, these occurrences should be treated as opportunities to teach more positive interactions. Information regarding differences among students should be explained, as students at this age depend heavily on observable traits.

SOCIAL COGNITIVE DEVELOPMENT DURING THE EARLY ELEMENTARY YEARS

As children reach primary school age they begin to realize that others may hold views different from their own. Even though young school-age children begin to differentiate their individual perspective from that of others, this differentiation is subjective and does not typically translate into cognitive understanding of the others' perspective. During the early elementary years, friends appear to be chosen who fulfill the student's expectation of providing one-way assistance, without reflection upon the friend's feelings or needs. Children are just beginning to distinguish between intentional and unintentional actions at this time. There is generally no realization or understanding that people, at times, hide their feelings. Children begin to learn to enter groups, control their aggression, and resolve minor conflicts as they grow socially. Early social development also requires the child to be able to recognize his or her own emotions, as well as others' feelings. The expression of emotion is also recognized as critical. Characteristics such as helping, sharing, and cooperation have been recognized as desirable at this age and throughout later development.

SOCIAL COGNITIVE DEVELOPMENT OF INTERMEDIATE ELEMENTARY SCHOOL AGE CHILDREN

Older elementary students can now reflect upon the thoughts and feelings of others, however, they do

not hold their own perspective and that of another simultaneously, as is necessary to compare and contrast two viewpoints. During the middle elementary years, friendship is often based upon a shared interest and/or activity and the exchange of possessions. Demonstration of concrete supportive behaviors is also important to friendship at this time.

During the final elementary years, children tend to share in a more reciprocal fashion and to develop mutual trust. Children increasingly see themselves as others see them. Loyalty begins to receive greater emphasis within the relationship, which is now becoming a two-way entity. Children typically begin to prefer interacting with same-sex peers from approximately ages eight through twelve. They may in fact display some antagonism toward the opposite sex during this developmental stage.

The increased reciprocity of friendships suggests the need to both educate the general education student regarding their expectations of students with severe disabilities, and to design specific programs for students with severe disabilities addressing interactive skills and necessary adaptations. Opportunities should be provided that allow students of like gender to interact socially, as this is the preference of most children during these years. Students will continue to need assistance in seeing another's point of view from time to time, making role-play experiences helpful and successful means to increase social abilities. If facilitation approaches place students at this age into specifically defined roles, these roles are unlikely to change in the general education student's mind. In other words, peer tutors will most likely maintain their hierarchical roles throughout their interactions with students with severe disabilities. Students with severe disabilities may need to receive instruction regarding situation-specific supportive behaviors, in order to develop a reciprocal relationship that is satisfying to both students.

SOCIAL COGNITIVE DEVELOPMENT DURING THE SECONDARY SCHOOL YEARS

Beginning at approximately grade seven, the child's same-sex friends begin to share the critical support role previously filled by the student's parents. As supportive influences are changing, students begin to step outside of their own viewpoint, as well as

their friends, and can now assume the perspective of a neutral third person. These new abilities parallel the individual's overall cognitive development, allowing students to support one another and share their problems.

Older secondary students display the potential for adultlike social understanding, which includes empathy. This concern also extends beyond personal relationships to include concerns for the environment, health issues, and conservation. Their social focus also moves to relationships of greater loyalty and intimacy with their peers. Increased independence is often reflected in the diminishing need for constant peer approval as adolescents grow. Friendships among adolescents are expected to offer understanding, reassurance, and emotional and social support in stressful situations.

Peer pressure constantly influences the secondary student's use of the social cognitive skills he or she has developed. The value given pro-social behavior by the peer group or school culture is critical to developing an atmosphere conducive to successful inclusion of students with severe disabilities. Students in this age group have far greater capabilities of perspective taking and empathy than they typically display. Interventions that purposefully tap into these skills should be very beneficial in achieving more favorable outcomes for social inclusion in secondary school.

Secondary school females are more often described as comfortable displaying caring behaviors. Because males place greater value upon independence, they may be less likely to display overprotective behaviors toward students with severe disabilities, and in fact provide included students greater opportunity for engagement in activities without assuming a predominately helping role in the relationship. The culture of the school environment obviously plays a critical role in influencing general education students' inhibitions regarding pro-social and accepting behaviors. Perhaps much of the pessimism surrounding social inclusion during adolescence is unwarranted and reinforced only by our inability to employ the appropriate multifaceted facilitation methods.

FROM INTERACTION TO FRIENDSHIP FACILITATION

Moving from short-term social interaction to long-term ongoing friendly relationships requires more

than choosing a best friend for a student, assigning a peer tutor, teaching social skills curriculum, establishing clubs or providing disability awareness. Facilitation is a combination of strategies that attempts to promote a climate of concern for all others in the environment. Most agree the role of facilitator should be shared by general and special educators, teaching assistants, classmates, family members, counselors, and community members. To become comfortable facilitating the development of friendships involves recognition of how often we help each other with all of our friendships every day.

Day-to-day facilitation may involve getting students together to allow them to get to know one another, encouraging budding friendships, modeling ways to include students with disabilities, and allowing them space to grow. Specific methodologies may involve special interventions or simply the encouragement of natural relationships between students. The research and proposed strategies suggest a general perception that facilitation of friendships between students with and without disabilities is less difficult in the preschool and elementary school setting than in the secondary environment. This may be due to the structure of the preschool and elementary school which allows the classroom teacher greater time with the students and autonomy to establish a consistent classroom climate. The highly competitive nature of high school is also identified as negatively affecting the likelihood of successful inclusion. Consideration of the changing stages of the social cognitive development of the general education student further complicates the process of facilitation. Peer tutoring and special friends programs have been criticized for their matchmaking qualities and oversimplification of what true friendship means. Singular strategies are unlikely to generate solutions for such complex undertakings, and many programs used to facilitate social relationships were not designed for that specific purpose.

Researchers have identified essential conditions to help students connect and increase the likelihood of building friendly relationships. These include the obvious prerequisites of full inclusion and the required communication supports. Use of creative problem solving and attention to age-appropriate activities are also necessary. *Inclusion* refers to a broad climate of acceptance and diversity that transcends any singular group.

UNIQUE DEMANDS ON FRIENDSHIPS AMONG STUDENTS WITH AND WITHOUT DISABILITIES

Communication difficulties are most often noted as one of the greatest hurdles to overcome in developing and maintaining friendships in the inclusive setting. Initial communication issues can often be addressed through adaptive technologies, and students often develop improved communicative interaction when afforded enough time together. These needs should be clearly addressed and progress monitored in the students' IEPs.

The hierarchical nature imposed upon student relationships in some settings can also result in unnatural consequences unique to such relationships. Even though friends are routinely accustomed to helping one another, should this helping relationship become one way only, the relationship is less likely to be described as a true friendship. The nature of these unique relationships may be better framed as reciprocal when the nondisabled students see their friendship as a social growth experience. Teachers have reported the observation of considerable growth in the social skills of nondisabled peers who actively interact and relate to students with disabilities. The advantages to nondisabled students that result from inclusive activities are being increasingly recognized by both the students themselves and the facilitators.

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DEVELOPING COMMUNICATION AND SOCIAL INTERACTION SKILLS

One of the most important reasons for inclusion of children and youth with severe disabilities in school, work, and community is to provide the opportunity for social benefits. These opportunities include belonging to a group and having membership, developing friendships, and acquiring a network of social support. In school, it is argued that for children with severe disabilities, the potential social benefits of inclusion are more important than the potential academic benefits.

However, early research on inclusion, particularly in early intervention programs, indicated that physical proximity of children with severe disabilities to normally developing peers did not ensure that the desired social interactions would occur or that friendships would develop. It has been noted that the reasons for this are due, in part, to lack of communication and social interactions skills of children with disabilities. As a result, much attention has been given, in research and in curriculum and program development, to the teaching of communication and social skills to children with severe disabilities. Although the benefits of inclusion for children with severe disabilities are not entirely dependent upon their ability to communicate and interact effectively (i.e., physical proximity alone may provide opportunities for normal peers to engage children with severe disabilities in various beneficial ways), the ability to communicate and interact socially, even at a rudimentary level, greatly enhances the potential social benefits of inclusion.

LANGUAGE, COMMUNICATION, AND SOCIAL SKILLS

Language, communication, and social skills are highly interrelated, mutually interdependent, and develop together. In normally developing children, language and communication development, as well as social development, occur in a generally predictable sequence, with generally predictable milestones at certain chronological ages (although there is some variability due to a variety of factors that may be internal or external to the child). Additionally, although there are a variety of theories (e.g., Skinner's behavioral, Chomsky's psycholinguistic, and Piaget's cognitive-developmental) about how and why language and social development occur, there is little disagreement over the actual path and chronological timeframe which is observed in most children.

Language is defined as a system of rules, structure, context, and vocabulary that combine together to form a coherent and universally understood system for communication. Normal development of language occurs in stages, progresses from simple to complex in structure, and progresses in vocabulary size and diversification as well as in semantic and contextual utilization. Understanding and utilization of a language requires the acquisition of

knowledge about the various aspects of the rules which govern its use. For most, oral or spoken language is the vehicle used to communicate, and is the outer indication that inner language understanding exists.

Communication, on the other hand, is defined as the act of reciprocal interaction, involving intent on the part of the communicator, content to be communicated, and another individual to which the communication is directed. Communication may or may not involve the use or require the existence of language. As well, there are many forms of communication (e.g., spoken, manual signs, gestures, or other discrete behavioral acts). It is generally accepted that communication involves intent and serves a function for the person attempting to communicate. If the intent and/or the message is not perceived or correctly understood and function is not served then we have a failure to communicate. Unfortunately, it is often the case that children and youth with severe disabilities, who use gestures and discrete (and sometimes idiosyncratic) behavioral acts to attempt to communicate intent and to serve a function, the communication fails because others in the environment do not recognize the intent.

Social interaction can involve performing or participating in a variety of different behaviors, activities, or tasks, at different levels of complexity for a variety of different purposes. Developmental psychologists and educators have noted that in the norm social interaction skills and social development are aligned with cognitive and language development. Social development is also influenced greatly by experience, environmental context, and cultural mores.

Although language, communication, and social development are distinctly different phenomena, they overlap considerably and are highly interdependent. So much so that it can be said that all communication is social and all social interaction is communicative. Stated another way, this means that communication always is driven by a social context, and that social interaction always requires the use of some form of communication. The importance of the relationship is that, because of this, the teaching or promotion of communication and social skills must be contextually based in order to be effective.

COMMUNICATION AND SOCIAL SKILLS OF CHILDREN AND YOUTH WITH SEVERE DISABILITIES

Almost by definition, children and youth with severe disabilities are significantly deficient in communication and social skills in comparison to their normal peers. In a majority of cases this is due to the presence of significant cognitive or intellectual disabilities (formerly referred to as mental retardation). The presence of significant intellectual disabilities restricts one's ability to acquire, develop, diversify, and generalize all forms of knowledge and skills, including those involving communication and social interaction. Additionally, much of the conceptual development, representational logic, and higher-order thinking (which begins to evolve in most normal children from twelve to eighteen months of age) that is correlated with language and social development is either substantially delayed or does not develop. As a result, children and youth with severe disabilities are observed to have extremely limited cognitive and behavioral repertoires, which further hinders other learning. Language, communication, and social-skills development are critical learning outcomes but they are also important vehicles for other learning. Perhaps the best example of this is the fact that children with language disabilities also experience difficulty in learning to read due to the fact that reading is language based.

Several other factors are also often related to the lack of communication and social development in children and youth with severe disabilities. One such factor is the presence of sensory and/or physical disabilities and chronic health impairments. Being deaf or blind under many circumstances may affect one's learning how to communicate or interact with others. Several physical disabilities (e.g., cerebral palsy) may also make normal spoken language very difficult or impossible and may severely limit the effective use of other forms of communication such as sign language. Chronic health impairments may limit learning opportunities and reduce alertness or availability for learning. Another factor that may limit communication and social development is the presence of interfering behaviors. Although many types of interfering behaviors (e.g., self-stimulatory, self-destructive, disruptive, or aggressive) may serve

some function for the individual (e.g., gaining attention or escaping from a situation), if the intent is not understood these behaviors may actually interfere with the development of constructive and more accepted forms of communication and social interaction. Research on the social inclusion of children with severe disabilities in school indicates that interfering behaviors are a significant obstacle to social interaction and friendship development with normal peers.

An additional reason why such a large proportion of children and youth with severe disabilities have very limited communication and social skills is because of lowered expectations and the associated social isolation that many of these children and youth experience. Despite multiple federal mandates in civil rights and education law requiring equal access and opportunity regardless of handicap, many children, youth, and adults with severe disabilities continue to be excluded from the mainstream and segregated into handicapped-only daycare centers, schools, recreation programs, residences, and work places. Unfortunately, these environments are impoverished with respect to the abundance of appropriate communication and social skills role models and opportunities to interact. As a result they do not foster communication and social development in ways that “normal” learning, living, and working environments do.

Although the limitations in communication and social skills in children and youth with severe disabilities are well documented, it is also the case that there is a wide range of skills within the population. Some individuals with severe disabilities have limited oral language and literacy; others do not speak but have an established repertoire of signs and gestures, while still others use electronic communication aids. Some children and youth with severe disabilities are instructed in (and use) “total communication” which may involve multiple input and output modalities (e.g., signing and speaking or gesturing and selecting a communication board icon). Given the importance of communication and social development, and the prevalence of substantial deficits and wide variation in communication and social skills in this population, it is critical that individualized assessment and intervention begin early and take pragmatic and contextually based approaches.

INDIVIDUALIZED ASSESSMENT OF COMMUNICATION AND SOCIAL SKILLS

Prior to the development of an intervention program to teach communication and social skills it is important to consider the child’s personal-social context (i.e., home, family, community, school, work). Because communication and social development are so closely tied to these contexts, assessment should inform and help to align intervention with important factors in the child’s life. For example, assessment of home and family characteristics and routines will allow for selection of communication methods and content that is relevant to and supported within the home and family.

There are a variety of other personal characteristics and circumstances that should be assessed initially. Chief among these is the child’s cognitive, physical, and sensory status. The presence of significant cognitive, physical, and/or sensory disabilities will have implications for the approaches taken to teaching communication and social skills. Other factors which should be assessed include: the child’s present communication and social interaction skills, the immediate communication needs, the contexts (environments) in which the child has opportunities for interaction, the child’s interests and preferences, conceptual symbolic-representational understanding, available response modes, and possible initial communication content.

Assessments should be conducted in naturalistic settings, involve significant persons in the child’s life, involve the use of multiple repeated measures, and be focused on relevant social contexts and activities. The child’s parents, siblings, classmates, friends, and teachers should be involved; and assessment information should be collected through observations, interviews, and discussions. The primary goal of assessment is to gain a clear understanding of how the child communicates and interacts within important personal-social contexts so that an effective intervention program can be developed. The goal of intervention is to attempt to develop independent, interactive, and generalized communication and social skills usable within the environments and contexts where the child is expected to function. Given the developmental nature of communication and social skills, it is necessary that assessment be ongoing.

ing and frequent so that intervention goals and methods can be updated as the child learns skills and/or as the child's needs for communication and social skills change.

INTERVENTION STRATEGIES FOR TEACHING COMMUNICATION AND SOCIAL SKILLS

Historically, communication therapy and social skills instruction was carried out in situations and contexts different from where the child was expected to use the skills. For example, communication therapy was provided in therapy rooms and social skills were taught in simulated social skills training groups. The overwhelming preponderance of empirical evidence indicates that these strategies are not effective, due largely because of the failure of generalization or transfer of skills learned.

The widely accepted alternative is to situate or embed instruction into natural contexts, thereby eliminating the need for transfer. It has also been noted that naturalistic intervention embedded in familiar contexts provides greater support for the initial learning and maintenance of skills. Sometimes referred to as "milieu teaching," this approach places and distributes intervention and instruction within and across natural routines. Additionally, instruction involves teaching multistep or multicomponent and reciprocal patterns in which communication is intertwined with social interaction. Both expressive and receptive communication is promoted and vocabulary and structure is developed simultaneously. This approach to intervention is pragmatic, and draws upon a variety of specific techniques dictated by the particular needs of the child and the characteristics and demands of the context where the skills are to be learned and used.

Providing direct intervention to teach communication and social interaction skills is one of the most effective methods of improving the social opportunities for children and youth with severe disabilities in inclusive settings. However, in order to enhance the social outcomes of inclusion it may also be useful to focus the intervention on the environment rather than the child with the disability. The two most important methods for doing this are the use of instructional adaptations and peer-mediated interventions. Instructional adaptations involve changes in

any aspect of curriculum or instruction that enables a child to participate in an activity without possessing the requisite skills. Examples of adaptations include simplifying materials, giving more assistance, or lowering performance expectations. Adaptations may be used to compensate for physical, sensory, or cognitive disabilities on a permanent basis or they may be used until requisite skills are learned and then faded out and eliminated.

Peer-mediated interventions are also an effective means for promoting appropriate social participation and interaction in inclusive settings. Peer-mediated interventions are those that impact on outcomes for children with disabilities and that are delivered "through" peers (typically classmates or friends). Phillip Strain and his colleagues have demonstrated the effectiveness of peer-mediated interventions through a series of investigations aimed at developing social skills, play behaviors, and communicative interactions. Typically, the "normal" peer is taught roles or strategies used to interact with, instruct, or assist the peer with disabilities within a structured social play context. The peer with disabilities, in turn, has opportunities to participate and interact in activities and to learn important communication and social interaction skills.

AUGMENTIVE COMMUNICATION AND ASSISTIVE TECHNOLOGY

Additional effective methods of promoting communication and social interaction include the use of augmentive communication and assistive technologies. For many children and youth who are unable to acquire language or use speech, augmentive communication and assistive technology may be important alternatives. Augmentive alternative communication is "an integrated group of components, including the symbols, aids, strategies and techniques used by individuals to enhance communication" (American Speech-Language Hearing Association 1991). This could involve unaided augmentation (e.g., communication boards or booklets). User response modes could involve direct selection, scanning devices, or encoding. Symbol systems could involve the use of letters, words, pictures, symbols, or actual objects. Augmentive communication, which is sometimes referred to as "total communication," normally involves the use of mul-

multiple modalities for input, such as the use of speech and sign or pictures and sign. Similarly, output, or expression on the part of the user, may also involve multiple modalities. Augmentive or total communication is used to take advantage of redundancy and thereby increases the likelihood of comprehension for the listener.

Finally, assistive technology may provide a viable means of communication for children and youth who are unable to do so in traditional ways. Assistive technology is defined by the U.S. Department of Education as “any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities.” Although defined broadly here as useful for a variety of purposes (e.g., modality, environmental controls, etc.) assistive technology has been particularly important and effective for communication purposes. Assistive technology devices and systems may be high tech (i.e., electronic, computer-based) or low tech (i.e., mechanical, non-electric, or motorized). Since the passage of the Technology-Related Assistance for Individuals Act in 1978, and with the development of microcomputer technology, an entire industry has evolved with a whole range of systems that are available, including output, scanning, and selection devices. Interestingly, many of the same principles of assessment and intervention discussed earlier, such as the emphasis on individualized, pragmatic, and contextually based assessment and intervention, apply also to the assessment, development, and utilization of assistive technology for communication and social intervention. It is also often important, particularly for classroom peers, to demonstrate the use of these devices and systems in order to facilitate communication and social interaction with their peers with disabilities using the assistive technology.

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POSITIVE BEHAVIOR SUPPORTS

It is not unusual for students with severe disabilities to exhibit problem behavior. Problem behavior is gen-

erally defined as behavior that interferes with the health, safety, or functioning of the individual or others in his or her environment. Problem behavior jeopardizes the student’s access to inclusive settings because it can disrupt school activities and interfere with the learning of other students in the classroom.

Positive Behavior Support (PBS) is an empirically validated approach for effectively influencing change in significant problem behavior that individuals with severe disabilities may experience in home, school, work, and community settings. Rooted in Applied Behavior Analysis, PBS originally emerged as an alternative to the use of aversive methods for reducing or eliminating undesirable behavior in individuals with severe disabilities. Sometimes referred to as functional behavior support, positive behavior supports are based on the premise that behavior occurs for a reason and discovery of that reason leads to the development of effective supports and interventions.

For example, behavior may be a form of communication—it may be the way the student indicates illness or displeasure. A student’s behavior may effectively serve to initiate or terminate an activity or interaction. What parents or educational personnel regard as interfering behavior may help the student to acquire or avoid something, such as an object or attention. Behavior may be the student’s only means of exerting control over an unstimulating or oppressive environment. What is viewed as behavior may actually be a symptom of a physical disorder. Fundamental to PBS is the assumption that most behavior serves some purpose or occurs for a reason. Exploration of those reasons is a major component of positive behavior support.

The aim of positive behavior support is to develop a thorough understanding of the person and the contextual variables that contribute to the behaviors in order to create positive, lasting change. Important information is gathered about the person and includes, but is not limited to, discovery of personal lifestyle preferences, an examination of factors that affect the student’s quality of the life, and learning about the student’s likes, dislikes, strengths, and skill needs. Rather than targeting behaviors to be reduced or eliminated, PBS interventions are based on changing environments and circumstances. Today, the primary aim of PBS is to bring about more inclusive and personally meaningful lifestyles for children, adolescents, and adults with severe disabilities. An

underlying assumption of PBS is that behavior reduction is a by-product of intervention rather than its primary focus.

In the past, when an individual with severe disabilities exhibited challenging behavior, the accepted treatment protocol was based on topography and severity, that is, what the behavior consisted of, as well as the gravity of its effects. Intervention most often focused on decreasing or eliminating the behavior(s) of concern, using techniques that had been empirically validated for that particular topography. Behavioral interventions were grouped according to their level of intrusiveness; practitioners were to utilize a more restrictive procedure only when less restrictive ones proved to be ineffective. For individuals who exhibited high rates of extremely self-injurious, aggressive, or destructive behaviors, many practitioners began to rely heavily on punitive and aversive techniques, such as seclusion, visual masking, water or vinegar misting, mechanical restraint, and electric shock. Some practitioners and researchers began to question the humanity as well as the efficacy of such approaches.

The use of aversive procedures often inflicted physical and psychological pain or trauma. The application of aversive behavior-change methods most often prevented the individual's access to and participation in more stimulating opportunities, activities, and learning environments (in some cases, this can be said for less intrusive practices as well). Behavior-change interventions were often carried out in highly specialized environments, such as behavior-shaping units operated by institutions, clinics, or residential group-home providers. Individuals were not released until their behavioral problems diminished. Consequently, they were often forced to remain in environments that may have been contributing to their problem behavior. The quality of life for individuals with severe disabilities who also had significant behavioral issues was at one time extremely poor, compromised by their behaviors as well as the treatments intended to improve those behaviors.

Two frequently expressed criticisms of traditional behavior treatments were the lack of generalizability and durability of treatment effects. A growing body of research and meta-analysis of previously published studies supported these concerns. Results indicated that behavior change brought about by aversive ap-

proaches lacked durability over time and often did not generalize to other settings or social contexts.

FUNCTIONAL BEHAVIOR ASSESSMENT

Functional Behavior Assessment provides the foundation for the development of positive behavior interventions. There is a compelling body of research indicating that behavioral interventions that are based on functional assessment are significantly more effective than interventions that are not. Functional Behavior Assessment consists of information-gathering and team-based problem-solving activities which are conducted to (1) develop knowledge and an appreciation of the person, (2) develop an understanding of the contextual variables that influence the person's behavior, and (3) guide the development of effective behavior support interventions. Functional assessment is based on the premise that behavior occurs for a reason and discovery of that reason could lead to effective treatment approaches. Functional assessment helps to identify when, where, and under what conditions challenging behaviors are likely to occur and not occur, as well as identify those consequences that may be maintaining the behaviors. Functional assessment also considers lifestyle issues and other factors that may contribute to the behavior or jeopardize the individual's quality of life.

There are a number of models for functional behavior assessment reported in the literature. Each describes a multistep process that generally consists of the following activities: (1) describe the behavior of concern in clear, operational terms; (2) make decisions about the levels of behavior severity and which behaviors are priorities for intervention; (3) gather information; (4) develop a hypothesis as to possible functions of or reasons for the behavior; (5) design a positive support plan that addresses the hypothesized reason the behavior is occurring; (6) implement the plan; and (7) regularly monitor and evaluate the plan, and revise as needed.

Though it may appear to be, functional assessment is rarely a linear process. The information gathered during one step of the process may need to be revisited as new or additional information surfaces during another. For example, though the behavior support team may have clearly defined a particular behavior that they have targeted for assessment and

intervention, subsequent observation (conducted during step three) may necessitate that they rewrite their definition (return to step one) or reverse their decision about treatment priorities (return to step two). The steps in the functional assessment process can be implemented separately or simultaneously, and usually they occur in a cyclical fashion.

GATHERING INFORMATION

Step three, the gathering of information, is the most important and time-consuming step in the functional assessment process. The kind, breadth, and depth of information to be gathered can vary considerably, depending on the student, the behavior, and the circumstances. Minimally, most researchers recommend the examination of specific contextual information (i.e., antecedents, setting events, and maintaining consequences) to help understand when, where, and under what conditions behavior is most likely to occur and not occur.

Antecedents are events that precede the occurrence of the target behavior(s). Antecedents, for example, can include a specific request, a termination of an activity, or removal of a preferred item. To illustrate, when told he must put away his Game Boy, Michael bites his hand. When the bell signals that recess is over, Jodi begins to scream.

Setting events are previous and current environmental issues and events that influence the occurrence of the target behavior. Setting events may be physiological (e.g., fatigue, hunger, pain, and physical discomfort); social (e.g., number of friendships or access to preferred or interesting persons); or physical (e.g., schedule changes, level of stimulation, access to preferred things or activities, daily routines). Some researchers also consider affective states to be a form of setting event. Setting events may be proximal, that is, present at the time the target behavior occurs (e.g., noise); they may be distal, that is, related to an event or condition that previously occurred or will occur at a different time (e.g., a previous fight with a significant other, or an upcoming hospitalization or holiday). For example, Mary is more likely to hit other students on days when she is not feeling well (proximal, physiological setting event). Joe is more likely to be verbally abusive in math class on those days that he rides the bus to school (distal, physical, or perhaps social setting event).

It is important to examine the relationship between setting events and antecedents. For example, on most days, Michael complies with the teacher's directive to put away the Game Boy. However, on days when it is extremely noisy in the classroom or when he is worried about the weather, Michael will usually bite his hand following the teacher's directive to put the Game Boy away. Often, a particular setting event or antecedent alone will not trigger the occurrence of a particular behavior; however, when a particular antecedent is paired in combination with a particular setting event, the target behavior is likely to occur.

A consequence is an event that occurs immediately following the occurrence of a behavior that serves to strengthen the behavior by making it more likely to re-occur. For example, when Sam throws his book on the floor during independent practice in math class, he is called to the teacher's desk for individual instruction and assistance. When Suzie forcefully spits out her food, the instructional aide stops feeding her.

It is extremely important to identify setting events and antecedents that trigger target behaviors and the consequences that maintain them. However, the behavioral difficulties of students with severe disabilities are generally more complex, and are often related to the interaction between their immediate environment and a number of other factors, such as the student's general skill levels, receptive and expressive communication, physical and psychological health, life experiences, quality of life, and so on. For students with severe disabilities, additional information is needed.

Functional Behavior Assessment should include an inventory of the student's functional skills and skill needs. In addition to knowing what the student can and cannot do, it is important to ensure that the student's current skill repertoire is well suited to the physical and social environments the student encounters at home, in school, and in the community.

Functional Behavior Assessment should also include assessment of the child's expressive and receptive language abilities. For students whose communication is limited, assessment should provide an inventory that indicates known ways in which the student produces certain messages (e.g., greetings, requests). Additionally, it should be determined whether adults and other students who share space or activities with the student understand and respond to these communication efforts.

Lifestyle issues should be considered as well during the functional assessment process. The depth and breadth of this information will vary across learners and their specific situations. It is important to know if and how the interfering behavior affects the student's physical and psychological well being, interactions with others (e.g., siblings, peers), and performance in school. It is important to examine how many and what kind of social relationships the student enjoys; how the student spends leisure time; and the kinds and frequency of activities in which the student participates (in the home, school, and community). The student's level of self-determination should also be assessed; this includes how much control the student is able to exert over the environment, and how such control is exerted.

In order to generate effective behavior interventions for students with severe disabilities, it may be important to develop an historical perspective so team members can better understand the student and his/her behavioral challenges in context, over time. The level of detail will vary, based on behavior, severity, and durability. Histories should summarize, from birth to present, significant life events, where and with whom the individual has lived, school and residential placements, medical issues, and the content and effectiveness of previous behavioral interventions. In cases of significantly challenging behavior, it is extremely important that the historical perspective include a review and analysis of each medical and psychiatric diagnosis, and the medications, treatments, and therapies prescribed for each.

TYPES OF FUNCTIONAL BEHAVIOR ASSESSMENT

There are three different types of functional behavior assessment used to collect information about the student and factors relating to the behavior(s) of concern: informant methods (also known as indirect methods), observation (also known as direct methods), and functional analysis (also known as clinical or analogue analysis).

Indirect methods are utilized to gather information that is provided by others who know or have contact with the student, using any of a variety of methods, such as review of records, discussions, person-centered planning activities, structured inter-

views, and the completion of checklists, rating scales, or surveys. Informant methods can yield a range of information that helps to develop an understanding of the person and the contexts surrounding the behavior.

Observational methods consist of any of a variety of techniques in which the person and behavior of concern are observed in settings in which the behavior does and does not occur, and the data is systematically recorded. Frequently used observational methods include A-B-C (antecedent-behavior-consequence), recording, and scatter plots.

Functional or analogue analysis is the intentional manipulation of one or more variables in a controlled setting to determine those variables that occasion and/or maintain a particular behavior or behavior set. While the literature indicates that analogue assessment is generally not used in applied settings, there is research that has demonstrated its effectiveness as a means of hypothesis testing (step four of Functional Behavior Assessment).

DEVELOPING AND IMPLEMENTING THE BEHAVIOR SUPPORT PLAN

Step four in the functional assessment process entails the formulation of a hypothesis about the purpose or function of the target behavior. If the information gathered and reviewed by the behavior team is comprehensive, it should not be difficult to generate reasonable hypotheses about why the behavior is occurring. At this stage, it is important to remember that one behavior may have multiple functions or that one function may be expressed by multiple behaviors. For example, Tia's team hypothesizes that her loud growls are communicative attempts to indicate illness, thirst, discomfort, or a wet diaper; to seek the attention of an adult or peer; and to initiate or terminate an interaction. Cole's team hypothesizes that his aggressiveness toward females in his age group is an expression of his interest in them: when Cole encounters a cute girl he wants to meet, he may slap her on the arm, spit at her, rush her, or grab something away from her and hit her with it.

In step five, the team develops a support plan, aimed to specifically address the hypothesized function of the behavior. At this point in the process, some researchers recommend that these hypotheses should first be tested by gathering data through di-

rect observation of the student in the settings in which the behavior occurs, or by intentionally manipulating antecedents, setting events, and consequences. According to other researchers, if sufficient and accurate information has been collected and it appears to be corroborated by direct observations that were conducted during the gathering of information, there is no need to test the hypotheses.

Steps six and seven (implement the plan; and monitor, evaluate, and revise the plan) should occur simultaneously. Careful monitoring ensures that the plan is being implemented as written; ongoing evaluation determines if the plan is effective. If not, the behavior team must collect additional information, formulate new hypotheses, and develop an alternative plan.

MULTI-COMPONENT INTERVENTIONS

Positive behavior support plans should consist of multi-component interventions. As the name implies, multi-component interventions are behavior support plans that include a variety of elements. Multi-component interventions include but are not limited to: (1) antecedent and setting-event modifications, (2) teaching new skills, (3) consequence interventions, and (4) lifestyle enhancement. Some researchers recommend using only those that apply in each individual case while others caution that these four areas are interrelated, and therefore, must be considered and addressed simultaneously. For example, teaching new skills that replace or eliminate the need for an individual to use a particular behavior may be a logical component of a support plan. However, if appropriate use of the new skill does not produce the desired effect for the student (consequent interventions) or opportunities for the person to consistently use the skill are not provided (lifestyle enhancement), the positive behavior support plan may be ineffective over time because the student will most likely resort to the earlier, undesirable behavior.

Manipulation of antecedent and setting events (i.e., stimulus-based approaches) has recently been getting much attention in the literature. Several meta-analyses of behavioral-intervention studies have revealed that those that include manipulation of ecological and setting events and/or redesign of the environment were more successful than those that did not.

Interfering behaviors often result from skill deficiencies or failure to use a skill or skill set. The logical intervention in this case would be teaching a new skill to replace or compensate for the behavior of concern. Skill training can involve acquisition, fluency, and/or generalization of a new or alternate skill in a variety of areas, such as adaptive behavior, academics, communication, coping and tolerance, or others. Skill training may or may not be directly related to the target behavior.

Choice making is frequently recommended as an integral part of a multi-component intervention plan, though some consider choice to be a subset of skill development, lifestyle enhancement, or ecological manipulations. Choice-making interventions can take several forms: teaching students how to make choices, providing opportunities for choice making, and honoring choices that are made. Research supports the use of choice making as an effective intervention for individuals with severe disabilities.

Positive Behavior Supports for students with severe disabilities is a longitudinal endeavor. Because of the severity of their disabilities, they will require support over their lifetime, in a variety of areas and ways: gaining and maintaining reciprocal relationships, accessing and participating in preferred activities and events on a regular basis, and exerting choice and control over day-to-day and life decisions. This support is needed not just to maintain behavior change, but also to sustain a safe and personally meaningful lifestyle.

It has been predicted that the use of multi-component interventions will most likely increase, as will their scope and complexity. Parents of individuals with severe disabilities and challenging behavior have emphasized the need for multi-component support approaches that include additional elements. For example, parents have requested that interventions include the restructuring of home routines and strategies for reducing stress for themselves and other family members. For the child who is experiencing behavioral problems, parents believe interventions should also focus on enhancing communication, expanding relationships, and increasing choice making.

SYSTEMS-CHANGE ORIENTATION

More recently, PBS is being described as a systems-change approach, placing less emphasis on support-

ing the individual and more emphasis on building capacity to develop and sustain effective practices and supportive environments. This broadened application of PBS is attributed in part to provisions of the reauthorized Individuals with Disabilities Education Act (IDEA) of 1997, which recommends, without providing a clear definition and procedural guidelines, the use of positive behavioral interventions for interfering behavior.

Following the reauthorization of the IDEA, it has become more common for PBS to be characterized in the literature as a systems approach (i.e., one that emphasizes the development of environments that support positive behavior). There are, however, two distinctly different thrusts to the systems-orientation perspective on PBS. The first refers to collaborative and coordinated efforts to develop and sustain structures and environments that support positive behavior in the individual. The second refers to efforts to achieve and sustain pro-social student behaviors in the schoolwide community.

From the individual perspective, a systems approach focuses on changing problem contexts rather than problem behavior. It is meant to capitalize on and enhance the complex and interrelated relationships between all systems and stakeholders, including the person with challenging behavior. It includes activities such as establishing rapport with families, understanding how particular behavior is influenced by the environment, partnership and teamwork, and providing sufficient support for all involved. It also requires creation of a flexible system that includes inter-agency collaboration and a commitment to resource reallocation.

In the second approach, the entire school becomes the focus of intervention. PBS focuses on reorganizing and creating structures to nurture a supportive culture that values and applies effective practices for all students in the areas of instruction and discipline. This schoolwide system is based in a policy framework complete with procedures, protocols, and routines. It utilizes schoolwide teams, provides for ongoing staff and professional development, applies data-based decisionmaking practices, and uses research-validated practices.

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ASSESSMENT AND CURRICULA

Throughout the years the approaches to curriculum and assessment have evolved for all students. Regardless of the instructional level or content area of the curriculum, assessment and curricula are closely interrelated. In other words, assessment should drive instructional assessment practices, and both are dictated by carefully chosen learning outcomes.

EARLY CURRICULA

Most early curricular approaches for students with severe disabilities involved remedial approaches and essentially taught the same content (intended originally for students with mild disabilities) but in a simplified version. Based upon delayed developmental tasks presented later than typical, the expectations for students with severe disabilities were derived from this watered-down approach with little regard to meaningfulness, functionality, and transfer.

In the past it was also customary to approach organized school academic activities for students with severe disabilities as a building process from the bottom up. In other words, focus was placed upon discrete skills addressed in isolation with a goal to eventually chain these miniskills together into the more complex objective. As a result, an inordinate amount of time could often be expended on what were considered prerequisite skills, delaying student progress indefinitely. Such criticism, along with less than impressive results from these bottom-up methods, led to the progression of the opposite curricular approach.

TOP DOWN CURRICULA

Progressing from the ineffective adaptation of the developmental curriculum, taught in a piecemeal fashion, curriculum development for students with severe disabilities later moved into a stage of top down curricula. The top down approach to curriculum represents a movement toward functionality and the need to focus on preparing students for adult life and referencing curriculum to post-school and adult environments. This position was first presented by Lou Brown (Brown, Nietupski, and Hamre-Nietupski 1976) and his colleagues at the University of Wis-

consin-Madison in a seminal paper titled "The Criterion of Ultimate Functioning." In a series of works that followed, this group delineated an approach to assessment and curriculum developed from analysis of current and future environments relevant to the student. With this approach, the content was typically divided between four comprehensive areas, which included skills related to: (1) domestic, (2) community, (3) vocational, and (4) recreational/leisure environments. These content areas address basic skills (i.e., those needed in the environment) and also included critical activities (i.e., activities unique yet critically important in one particular environment). The process of making curricular decisions typically involves the identifying of local environments of interest and need; conducting ecological inventories of those environments; performing a discrepancy analysis to identify the gap between needs and developed skills; and developing instructional plans as a result of these activities.

The focus upon the appropriate local environments is intended to satisfy the need to design a curriculum that directly meets the specific needs of the student in the familiar environments in which they must function. Ecological inventories provide the detail required to address specific skills necessary to effectively function within the student's specific environment. Discrepancy analysis describes the necessary initial assessment required to identify the difference between the students' strengths and needs regarding a specific skill inventory. The information gained through this specific skills assessment, which resembles a pre-test of sorts, is then the basis for the instructional plan designed to eliminate the gap between current functioning and the long-term goal.

The outcomes sought from the top down curricular approach are labeled *functional skills*. Functional skills are those skills which were accepted as important, useful, age-appropriate, socially valid, and enabling. These criteria are applied to all decisions regarding the student's individual educational goals.

THE IMPACT OF SCHOOL REFORM ON ASSESSMENT AND CURRICULA

The current school reform movement, which has focused upon specified standards and outcomes, has impacted the education of all students in America.

Heavy emphasis on testing and assessment and the accountability movement have resulted in new policies intended to measure student progress in a high-stakes environment. The reauthorization of the amendments to the *Individuals with Disabilities Education Act* (IDEA) of 1997 called for the inclusion of students with severe disabilities in general education and access to the general education curriculum for all students regardless of specific eligibility for special education services. The combination of the reform movement and the reauthorization of IDEA have had significant impact on the intended program planning for students with severe disabilities.

The changes in IDEA impacted the population of students with severe disabilities in several ways. The past and continued exclusion of this population within the educational setting was recognized as separate and unequal treatment. Additional changes were intended to address issues of belonging, valuing, friendship development, development of teacher expertise, and appropriate high expectations. While the promotion of such access and progress may be applauded, the specific needs of this population must be considered as all programs are revised and realigned to meet the requirements of the law. Recognition of the unique nature of students with severe disabilities accessing the general curriculum has led to experts calling for a multilevel model beginning with standards and moving through the IEP process, addressing instructional issues, and leading to appropriate individualized intervention.

Following closely behind the reauthorization of IDEA, the increased emphasis upon state and local assessment for accountability purposes has become widespread. In this context, educators of students with severe disabilities faced several problems. The standards address few areas for the population of students with severe disabilities, and the fact that full inclusion is not a reality for many students makes access to the general education curriculum more complicated. If students with severe disabilities are not included in the general education classroom then accessing the curriculum can, at best, be by proxy or through simulation. The options available in addressing access to the general education curriculum include modification or adaptation of the curriculum or development of a specially interpreted curriculum made up of functional skills and linked back to the same learning standards.

There are, however, other problems with general education curricula for students with severe disabilities. The general education curriculum is not functional or systematic for the population of students with severe disabilities; overall the level is too high and the pace of progression is unreasonable for them. Matching the general education curriculum and maintaining a level of functionality for this group of students is an exceptionally difficult challenge. In order to mesh the general education curriculum with the program planning for students with severe disabilities in a meaningful way, a curriculum inventory and a student inventory are required. The assessment component of a discrepancy analysis would then follow in order to address important learning goals in each student's Individual Education Plan (IEP).

INDIVIDUAL EDUCATION PLAN DEVELOPMENT

Efforts to incorporate the general education curriculum as required by IDEA 1997 and functional skills simultaneously into the IEP of each student with severe disabilities is a complex undertaking. Not every objective should be or can be addressed and learned at school. Some school experiences are not covered in the IEP specifically. Consequently, fewer, more comprehensive goals should be included in the IEP, remembering that as students grow older less of the general education curriculum is likely to be authentic and functional.

Each IEP objective and related criterion should be carefully chosen by the team. Task analysis of each discrete objective should then be matched to the appropriate teaching methods. The design of corresponding measurement and evaluation of the objective follows, as well as the outline of needed materials and the proposed schedule. The final step in IEP development for each objective would include a clear outline of the proposed fading, maintenance, and generalization methods planned. This complex process will require collaboration and consultation among all IEP team members in order to draw from the individual expertise of each.

Specific modifications to the general education curriculum employed by the IEP team may include adaptation of the amount of curriculum addressed, the length of time allotted to instruction, the amount of prompting and assistance provided to the student,

modification of the difficulty level, materials provided, and the output required of the student at the conclusion of the instruction.

ADULT OUTCOMES

A balance is needed between each student's participation in the general education curriculum and teaching toward adult outcomes. Adult outcomes are those that will help the students ultimately function happily and productively in self-fulfilling and valued roles in adult society. These outcomes focus upon the basic skills essential to achieving the maximum amount of independence an individual can be realistically expected to achieve based on authentic assessment.

The detailed attention to the design of the IEP, one objective at a time for each student, will inevitably determine the level of participation for that student regarding their participation in the general education curriculum. Use of a matrix, coordinating each objective with the time proposed for instruction, should be incorporated into each IEP. Settings for instruction, including the regular classroom, special classes, the school setting, and the community, should also be identified. A well-designed IEP would also outline the instructional delivery plan, including direct instruction, incidental learning, indirect independent learning, and planned skill practice for maintenance and generalization.

IEP team members required in order to produce the highest-quality plan for each student should include the student, special educator, general educator, teaching assistants, related service personnel, parents, and fellow students. Any additional individuals potentially involved in the specific students' educational success should also be included.

ASSESSMENT OF FUNCTIONAL SKILLS

Despite the move toward access to the general education curriculum and the emphasis on academic content customarily associated with the general education of mildly handicapped populations, the progressive development of critical functional skills must continue to be authentically assessed. Classroom teachers are most often responsible for formative measurement of student progress within the functional curriculum. This is vital to achieving maxi-

imum independence and optimal participation levels. Frequent data collection has routinely allowed teachers to measure and visualize student progress, making necessary instructional alterations when substantial progress is not indicated. Measurement of the diminishing need for assistance, prompts and primary reinforcement for example, provides valuable information to parents as well.

GENERAL EDUCATION CLASSROOM ASSESSMENT

In order to juxtapose the child's IEP within the general education classroom environment and routines, it is necessary to conduct an analysis of the general education classroom and curriculum. Assessment of the classroom environment should include attention to the physical organization of the room, the use of appropriate grouping methods, the materials available and used, and the teaching methods employed. Physical organization refers to, in addition to the room layout, the classroom routines, climate, rules, and general use of time. Grouping choices may vary between whole-class, large- or small-group, and individual or one-to-one dyads. These organizational and instructional methods and choices should be analyzed to determine how they could align with the child's IEP.

STATE AND DISTRICT ASSESSMENTS LINKED TO ACCOUNTABILITY

The *No Child Left Behind Act* (NCLB) passed in 2002, like the reauthorization of IDEA mentioned earlier, requires the provision of alternate means of assessment for students who cannot participate in the state or district assessments as typically accommodated. As individual states design specific statewide assessments for general education students, the requirement for alternative assessment, affording the inclusion of all special needs populations in the accountability movement, are also being required. The inclusion of most students with disabilities in statewide assessments is now required. Students with mild disabilities may be provided some accommodations in administration of the general assessment, but are usually required to participate by completing the same assessment as their nondisabled peers.

The mandate requires states to develop meaningful alternate assessment tools for students with the most significant disabilities, as the statewide exams are impractical. The students' IEPs should address their participation in the alternative assessment. Such assessments are typically performance or portfolio based and derived from the applicable state standards.

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SCHOOL AND DISTRICTWIDE SUPPORT

In order for teachers to effectively include students with significant disabilities it is necessary that school building and school district-level organizational supports be developed and put in place. Michael Fullen a noted school reform authority, and many other authors, indicated that school reform efforts that are effective and sustainable are those that result in a change in the culture and organization of the school (Fullen, 2001). So it is with inclusion: teachers, principals, related services personnel, parents, and community people need to work together to change the organizational structures, management patterns, and social climate in order to achieve an environment where all children can receive an appropriate academic education and also be part of the social fabric of the school.

This change is necessary because traditionally, in most schools, the structure, pattern, and climate has not supported the inclusion of all students; quite the contrary, it was only as recent as the 1970s (corresponding to the enactment of the *Education of Handicapped Children Act*, PL 94-142) that students with severe disabilities were even permitted to access public education, much less receive their education in regular schools and regular classes. Although U.S. Department of Education (1996) data has shown a gradual and steady increase in the number of students and the percentage of time in general education classes, many students with severe disabilities still are educated full time in separate schools or separate classes within regular schools. Education that is separate is fundamentally different and when a school

district or school building attempts, for the first time, to include a child with severe disabilities in the general classroom, different approaches are necessary. Often, changes in the organization, management, and climate of the school are necessary. Some of the more important elements of effective schooling that support inclusion are summarized below.

LEADERSHIP TO SUPPORT INCLUSION

A great deal has been written about the importance of leadership for effective organizations in general and for schools in particular. Traditional functions of leadership typically are described as including prioritization, goal setting, and planning; administering and managing operations; and supervision and evaluation of organizational and personal performance. Characteristics of effective leaders include important personal qualities such as organizational and interpersonal skills. Effective leaders also identify important themes, or a vision for the organization, that others can identify with and rally around. Good leaders are able to balance the responsibility for their own decisionmaking with the responsibility for developing organization-wide participation of others in decisionmaking at all levels in the organization.

More recent literature on school leadership emphasizes other functions, roles, and characteristics of effective leaders, many of which are the result of recent changes in the political and social contexts of education in our local communities and across the nation. Some of the more important changes in contexts which are impacting schools and school leaders are: the increased diversity in students and families; the globalization of the economy; the development of web-based and other digital technologies; the changes in structure and availability of funding; and the increased emphasis on accountability. Collectively, these factors have greatly increased the importance of student achievement outcomes and have, in turn, greatly increased the importance of school leaders being “instructional leaders.” The role of the educational leader has changed significantly over the past decade. A contemporary and popular term for important and effective school leadership is “collaborative leadership,” which is characterized by a more flex-

ible, problem-solving style, built upon personal relationships and shared across the organization.

School leadership may come from a variety of individuals functioning in a variety of roles and situations throughout the school district. School leadership may be provided at the district level and may originate from a variety of positions and roles (e.g., superintendents, assistant superintendents, school board members, curriculum area directors, or supervisors). Leadership may also be situated at the building level (an increasing number of school districts vest leadership and decisionmaking authority at the building level), and often the building principal is called upon to assume many important leadership functions. Others at the building level, such as assistant principals, supervisors, school psychologists, social workers, counselors, other related services personnel, parents, or teachers may provide valuable leadership to the school.

The concept of “teacher leaders” is relatively recent and is based upon the notion that teachers, given support and the proper opportunities for professional development, may acquire a wide range of skills and areas of expertise to enable them to provide leadership. In this context, teachers of students with severe disabilities may provide training, consultation, and support to general education teachers in curriculum adaptation, instructional strategies, behavior support, progress monitoring, modification of grades, and many other areas. Experienced teachers may also provide important leadership in program development and changes in buildingwide policies and practices (e.g., development of a peer buddy program or infusion of ability awareness content into the curriculum).

A VISION OF INCLUSIVE EDUCATION

Because inclusion is so new to so many schools, it is often necessary for school districts to revisit their mission or vision. Most organizations in the public and private sectors have gone through a process of planning, leading to the development and adoption of a mission and vision statement. In strategic planning the mission and vision statements are intended to provide the basis for organizational goal setting and action planning. Strategic plans, ideally, become the engine of the organization that members can identify with and relate to their particular role. Some of the values fundamental to a vision of inclusive education are as follows:

Community

Central to the concept of inclusion is community or community building. This affirms that all students and staff within a school form a community whose members share the same environment and a certain set of experiences, values, and goals. Building a sense of community within a school reinforces collectivist values that transcend a focus on individual abilities.

Diversity

Although inclusion has developed primarily from the need to include those formerly excluded, inclusion has evolved more broadly to embrace all types of diversity among members of the school community. Inclusive schools welcome diversity in social, ethnic, and religious background as well as in cognitive, behavioral, and physical ability. Diversity in schools and in classroom groups provides a richer learning environment and enhanced learning opportunities for all.

Membership

In inclusive education, membership means that all students have a chance to belong and to be accepted as part of the community or group. With membership come the benefits of participation and the opportunity to make contributions and to be recognized and respected as a full member, regardless of one's capabilities.

Ownership

In the literature pertaining to inclusion, ownership refers to the degree to which general education teachers willingly accept responsibility for students who have been included in their classes. In order for inclusion to work effectively, general classroom teachers must assume responsibilities for teaching and supporting students with disabilities in ways similar to the ownership teachers feel for other students. Often, teachers need time, training, assistance, and ongoing support from other professionals in order to achieve ownership for a diverse range of students.

Acceptance

Similar to ownership and membership, acceptance on the part of teachers and students occurs when

people come to understand each other. Understanding is accomplished most readily through sharing the same physical space, interacting and communicating with one another, sharing the same class projects and experiences, and developing relationships and friendships. It has been frequently noted, for example, that elementary students in particular will readily accept other children with visible physical, sensory, or cognitive disabilities once they learn about and can express similarities between themselves and those children.

Equity

Inclusion supports equity or equality of opportunity by allowing all students to participate and share in the same activities. Pull-out programs such as special education classes for students with mental retardation, remedial reading, gifted programs, or adapted physical education all represent educational opportunities that are conditional, based upon students' abilities or disabilities. Questions about the equity or fairness of these types of programs have arisen continually.

Support

Inclusive schools and classrooms are by their very nature supportive environments. Simply stated, support means giving someone something they need (e.g., assistance, help, consultation, etc.) in order to learn and to get along. Supports ranging in variety and intensity are developed and made available to all students based upon their needs. Additionally, teachers as well as students provide support to each other in inclusive schools.

Individualized Education

Special education services have always been defined as the development of individualized education. In designing an inclusive education program for a student with disabilities it is necessary to conduct an individualized assessment and develop individualized goals and objectives as a basis for providing an individualized sequence of learning activities based upon student needs and adapted from the regular curriculum. There is increasing interest, within the school reform literature, in de-

veloping more individualized assessment and instructional methods for all students. Margaret Wang developed the concept of adaptive instruction (Wang 1989) as an approach to providing an individualized education for all students.

Adaptation and Accommodation

Finally, inclusion means that although students will be educated in the regular class, not all students will be participating in the curriculum in the exact same ways, using the same materials, performing the same behaviors, or working toward the same goals, at least not all of the time. Adjustments in curricula and instructional practices (referred to here as adaptation and accommodation) are made, based upon individual student needs and abilities. In the inclusive school the regular classroom teacher works with the assistance and support of the special education support staff to identify, develop, and effectively use appropriate methods of adaptation and accommodation. Importantly, inclusive schools emphasize that since diversity in student abilities is accepted, differences in students needs will necessitate adaptation and accommodation, which is also accepted as a normal part of schooling (Lyon and Utley 1997).

TEAMWORK AND COLLABORATION

For inclusion to be successful the collective knowledge and skills of many different individuals is needed, and several different types of teamwork and collaboration are necessary. Collaboration in leadership has already been described as an important part of how the school district and school buildings should be run. Shared input and decisionmaking regarding the development and implementation of inclusive practices is particularly important: district policies affect schools, school practices affect classrooms, and classroom practices affect individual students. Therefore, it is important that participation and representation from all parts of the school district be secured so that the best interests of the students inform policies and practices.

Another important type of teamwork and collaboration is between special and general educators. The major focus of this is usually centered on rather specific instructional strategies, curriculum adaptations,

or other supports provided to students with disabilities in general education classes. Termed “collaborative teaming” this process includes a two-way dialogue in which the general educator shares knowledge and expertise about the general education classroom and curriculum; and the special educator shares knowledge and expertise about the adaptations and supports a child will need. In collaborative teaming the general and special educators (as well as other support staff) develop and negotiate an individualized plan for educating a child.

A third type of teamwork and collaboration is that which involves related services personnel. Related services personnel include physical, occupational, and speech-language and communication therapists, school psychologists, social workers, nurses, and others. Often, students with severe disabilities receive services from a variety of related services personnel due to the complexity of their educational, health care, and other needs. When children are included then related services personnel must collaborate with teachers so that needed services and supports may be provided within the regular education classroom. For many educators and related services personnel this requires a fundamental change from past practices in which therapies and other services were provided in isolated, separate settings. We now know that therapies and other support services provided within natural contexts and structured to support and not supplant the child’s access to the curriculum is more effective. As a result, related services personnel and teachers need to share information (and sometimes skills) so that the needed services and supports may be fully integrated into the child’s daily schedule.

Finally, collaboration with parents is an essential part of effective inclusion. Although home-school collaboration has long been viewed as an important role of special educators, the involvement of general educators with parents has traditionally been less intense. With the advent of students with significant cognitive, physical, sensory, and behavioral disabilities receiving their education within the regular class, the role of the general education teacher in collaboration with parents needs to be expanded. Often, parents have considerable knowledge and expertise about how to teach and care for their child and school personnel, including teachers, may benefit greatly from working closely with them.

DISTRICT AND SCHOOL PRACTICES

There are a number of districtwide and/or school building organizational practices which may impede or support the inclusion of students with severe disabilities. Among the most important are student placement, grouping, and staff assignment. Clustering student primary placements within particular schools or within particular classrooms usually makes effective inclusion extremely difficult. In a series of papers over the past decade Lou Brown and his colleagues (Brown, Long, Udvari-Solner, Schwartz, Vandeventer, Ahlgren, Johnson, Gruenwald and Jorgensen 1989) (formerly affiliated with the University of Wisconsin-Madison and the Madison Metropolitan School District) elaborated two important principles related to placement. The first is the concept of "natural proportions." Placement according to natural proportions dictates that in any given school or classroom there should be no more students with disabilities placed than what would normally occur. That is, students with severe disabilities constitute approximately 1 percent of the school population. Following the principle of natural proportions no school or classroom should have any more than 1 percent of these students. Congregate placements limit opportunities for students, complicate instruction and classroom management for teachers, and may reduce the quality of education students receive.

A second important principle related to student placement is the concept of the "home school." A home school is that school the child would attend if not disabled. In many communities home schools are located in neighborhoods where students live. Under this principle students with disabilities would follow the same attendance patterns and attend the same schools as their nonhandicapped brothers and sisters and neighborhood friends, rather than being bussed to separate special education centers or to other public schools where services are clustered into several self-contained classes. Following this principle requires staff, services, and supports to be dispersed throughout a school district. It also requires the development of a more widely dispersed array of expertise across a greater number of school buildings and classrooms. As indicated in the introduction to this chapter, beginning with the assumption that all students would receive their education in the regu-

lar class was really the underlying meaning behind the *Education for all Handicapped Children Act*.

Relatedly, the manner in which staff, including teachers and paraprofessionals, is assigned also has a great deal of impact upon efforts to develop inclusion. Under clustered or congregate arrangements teachers are given a class and paraprofessionals and, aside from a few limited opportunities (e.g., lunchroom, recess, gym class), students with severe disabilities spend most of their school day being taught in the self-contained class. An alternative arrangement is where, in elementary schools, support staff are assigned to a grade level and work closely with the students and teachers at that grade level. Middle school staffing patterns which are supportive of inclusion are sometimes organized by teams at grade level, including multiple-subject teachers (i.e., language arts, science, mathematics, social studies), special education teachers, and paraprofessionals. At the high school level teachers may be assigned to subject areas. These methods of organizing instructional resources and support lend themselves more readily to inclusion, primarily because support staff becomes more familiar with the curriculum and classrooms where they are supporting students.

There are a number of interrelated curriculum, instruction, and support practices that also impact on efforts to include students. Students should have access to participation in the regular curriculum and they should also participate in local district and state assessments (even though this is now a requirement of IDEA, many districts still struggle with implementation) for students with the most severe disabilities. In order for these students to participate meaningfully in class activities, projects, and other routines it will be necessary to make modifications. A variety of models and approaches to adaptation of curriculum and instruction have been developed and most proceed from the least intrusive or substantive to the more intrusive. The logic is, generally, that only those modifications are made that are necessary for a child's meaningful participation. Adaptations may be made to the goals and objectives, instructional materials, teaching methods and techniques, as well as the methods used to evaluate and grade student work. All of these types of adaptations are permissible under IDEA for students with IEPs. In this way efforts are made to provide the child as similar an education to that provided same-

age nondisabled peers as possible. If a child needs more intrusive or substantial modifications to the curriculum or instruction in order to have her/his needs met and/or to participate meaningfully in the classroom, then those modifications are made. This approach makes it possible to provide access to the general curriculum, to allow for participation in ways that are meaningful to the child's needs, to involve the child in regular classroom activities and routines, and to receive the social benefits as well.

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DEVELOPING SELF-DETERMINATION AND CHOICE

When students without disabilities exit formal education, it is expected that they will begin to responsibly direct their own lives by making good decisions about personal goals and how to work toward attaining them. The assumption of personal responsibility for the direction and quality of one's life is referred to in the literature as *self-determination*. Self-determination consists of a number of skills and personal characteristics that develop over time as children, youth, and adults experience and reexperience day-to-day and major life events. It includes the development of skills in choice making, problem solving, decisionmaking, goal setting and attainment, self-regulation, and self-advocacy. Additionally, self-determination is influenced by individual levels of self-awareness, self-knowledge, and motivation. Though some researchers debate the likelihood that students with severe disabilities can become self-determining, most agree that educational programs for these students should focus on opportunities and experiences that promote the development of self-determined behaviors.

Students with severe disabilities can experience many immediate and long-term benefits when their individual programs incorporate instruction in the component skills of self-determination and provide opportunities for them to utilize those skills meaningfully for a variety of purposes, including their own educational planning. There is growing em-

pirical evidence that indicates that increasing a student's level of self-determination can enhance student interest, motivation, and participation in the learning process; decrease interfering behavior; and positively influence post-school employment and adult living outcomes.

Inclusive environments can contribute significantly to the development of the self-determination of students with severe disabilities. First, in comparison to segregated educational classrooms and settings, inclusive environments provide a greater number and variety of experiences and opportunities that are reflective of certain quality-of-life indicators. These indicators include friendships and social relationships, membership and belonging, and citizenship. A priority adult outcome for students with severe disabilities is the realization and preservation of a satisfying and personally defined lifestyle. Exposure to the richness of activities provided in inclusive settings can serve to broaden students' experiences, increase their self-expectations, increase the expectations that others have of them, and ultimately expand the options available to them. Additionally, inclusive environments are far more complex than segregated ones, thus requiring students to utilize newly acquired self-determination skills, such as choice making or problem solving, on a frequent basis. These opportunities to contextually and regularly apply what is being learned will serve to strengthen the repertoire of skills needed to be self-determining.

DEFINITIONAL PERSPECTIVES ON SELF-DETERMINATION

Increasingly, reports in the current literature in severe disabilities emphasize the educational importance of self-determination. As more information emerges about self-determination, so do the number of ways to conceptualize what it is and how it pertains to children and youth with severe disabilities. Self-determination is a highly complex construct; researchers have yet to agree on how to define and classify it. Generally, there is consensus that self-determination is both an outcome and a means of outcome attainment. From there, points of view diverge and can be grouped into three broad categories: success, choice, and control. In other words, self-determination is either: (1) succeeding and experiencing personal success, (2) making and

having choices, or (3) exerting and being in control. None of these perspectives, when viewed alone, presents a satisfactory picture of self-determination as it applies to students with severe disabilities. Rather, the integration of these three points of view provides a compelling rationale for parents and practitioners to support and facilitate self-determination. When considered together, these multiple perspectives can generate more positive expectations of children and youth with severe disabilities. Conversely, the adoption of only one point of view on self-determination could result in the creation of barriers that limit or prevent it.

The success point of view on self-determination emphasizes autonomy, self-awareness, self-regulation, and accomplishment. From this perspective, an individual cannot be considered to be self-determined (or exhibit self-determined behaviors) unless he or she:

1. is autonomous, that is, acts independently of others, free of unnecessary or excessive external influence;
2. is self-aware, that is, has developed considerable knowledge about his or her strengths and limitations and how his or her actions and inactions affect others;
3. can self-regulate, that is, possesses the ability to assess the demands of social and physical environments and choose responses appropriate to the setting or situation; and,
4. can accomplish goals, that is, successfully applies a variety of skills over time to achieve long-range outcomes that are personally defined.

Given that many individuals with severe disabilities require extensive and even pervasive support to function, one could interpret the success point of view to mean that there is little or no potential for such persons to become self-determined. Without the expectation that students can acquire the skills needed to develop and practice self-determination, it is unlikely that the experiences and opportunities needed to do so would be provided to them.

The primary element of the choice point of view on self-determination is choice. While it is certainly true that choice is a critical feature in educational programs that promote self-determination (choice will be discussed in more detail later in the entry),

many researchers caution that misinterpretations regarding choice can create significant barriers. First of all, the terms *choice* and *self-determination* are not synonymous. Simply providing opportunities for a student or adult to make choices does not mean that person is or will become self-determined. Secondly, choice (and self-determination for that matter) is often associated with the concept of personal rights and freedom. This is sometimes interpreted to mean that an individual has *carte blanche* to do or not do whatever he or she pleases, even when such action or inaction could have detrimental effects to health, safety, personal growth, or dignity. This is not self-determination; in fact, such practices are condemned in the literature as abusive, neglectful, and unethical. Finally, parents and educators who believe that individuals with severe disabilities are incapable of making good choices about their lives may reject self-determination when it is presented solely from the choice point of view. They may associate choice with risk for potential injury, victimization, or harm. This association can present a significant barrier to self-determination. Children, adolescents, and even adults with severe disabilities could experience restrictions imposed by caring but overly protective family members, teachers, and service providers who may intentionally limit the kind and number of choices an individual is permitted to make because of concerns for health, safety, and personal well being.

Finally, self-determination is often described from a control point of view, that is, the exertion of personal control over day-to-day and major life decisions and events. This perspective can evoke some of the same concerns as the success and choice points of view. If one interprets control to mean *total* control, it is relatively easy to dismiss self-determination as a viable outcome for individuals with severe disabilities. The word *control* has many negative connotations. One who associates control with manipulation, for example, may reject self-determination because of fears it will encourage or attempt to legitimize undesirable behavior.

As mentioned previously, some of the literature on self-determination presents an all-or-nothing perspective; that is, an individual cannot be said to be self-determined unless able to independently apply all of the various skill components of self-determination to produce personal outcomes that are both

positive and socially acceptable. This view precludes the inclusion of many people with severe disabilities and most individuals with significant cognitive disabilities among the ranks of the self-determined. However, there is an ample body of empirical research that supports the ability of individuals with severe disabilities to influence control over their lives by communicating preferences, indicating choice, applying problem-solving approaches to influence decisionmaking, utilizing a variety of self-monitoring and self-management techniques, and setting and achieving goals.

Even so, some researchers, parents, and educational personnel continue to reject the notion of self-determination for students with severe disabilities simply because these students need some level of support to manage and participate in the myriad aspects of life. This need for support, however extensive, does not mean that individuals with severe disabilities, even those with significant cognitive disabilities, are incapable of participating in the management of their lives. Most people without disabilities, even though they are self-determined, need and accept some level of support in various aspects of life; they occasionally make mistakes or fail to learn from them; they sometimes make bad choices and decisions; and from time to time, they may flounder in the pursuit of an important personal goal. The skills and opportunities needed for self-determination are highly relevant and necessary in today's society. It is more likely that these important skills will be included and rigorously pursued as part of students' educational programs when parents and educators accept the notion that students with severe disabilities can become self-determined.

STRATEGIES FOR ASSESSING, TEACHING, AND SUPPORTING SELF-DETERMINATION

Individuals with severe disabilities can exercise self-determination. In order to do so, they need to have skills, opportunities, and appropriate support. Individual IEPs should include goals and objectives aimed at teaching skills needed for self-determination. Ample opportunities to use the skills needed for self-determination should be embedded in the curriculum and routines in the home and community.

Assessment Related to Self-Determination

Educational personnel must conduct assessments prior to the identification of educational goals relative to the development or improvement of self-determined skills and behaviors. The information that is needed is determined on an individual basis. Typically, assessment addresses abilities in communication and the expression of choice, the level of self-determination skills, and preferences.

Educators can use commercially produced or teacher-developed assessments to measure the various skills associated with self-determination. Though formal published assessments have primarily been designed for use with students with mild disabilities, they have been successfully adapted for use with students who have more significant disabilities. Many of these products are associated with curriculum packages in self-determination and preparation for transition; these can also be adapted.

Teacher-made assessment tools include checklists, questionnaires, and surveys that the teacher may use to organize observations regarding a student's current abilities or to obtain information directly from the student, family members, educational personnel, or others who know the student well.

One of the primary purposes of focusing on self-determination is to help the student attain a good quality of life that reflects personal lifestyle preferences regarding people, places, activities, and things, among others. Individual preference assessment is a valuable tool in promoting self-determination. For students with the most severe disabilities, it is crucial to also assess their ability to communicate their preferences and dislikes. Once preferences are known, parents and school personnel can provide regular access to them; likewise, they can help control the student's exposure to things not liked, thus increasing the student's personal pleasure and satisfaction.

Preference assessments are crucial in planning educational programs that promote self-determination. In order to be individually relevant, instructional goals and methods used for students with severe disabilities should reflect their preferences. Incorporating individual preferences into instruction in choice making, problem solving, and decisionmaking provides context for the student and has been shown to increase motivation. Teachers can arrange for more

meaningful and frequent opportunities for students to generalize skills when they know with whom, where, when, and under what conditions students are more likely to engage in various activities.

Though there are formal assessments that inventory the known preferences of students with severe disabilities, these can be of limited use if the student has not had access or the opportunity to experience a wide array of activities, materials, settings, and experiences, or if the student lacks any skills that might have been needed in those experiences. Thus, assessment to identify preferences must also consider and document these factors. If it has been determined that a student has had limited exposure, or seems to have developed a very limited number of preferences, the student's individual educational program should include the systematic introduction and assessment of preferences for new opportunities across multiple conditions. It is also important to determine if a student's dislike or ambivalence is related to skill deficits. Teaching general skills is just as important as teaching those needed for self-determination.

Consideration of the student's mode of communication is important when planning to promote and support self-determination. For students who do not have access to or use an alternative or augmentative form of communication, educational personnel must be attuned to and learn how to interpret other communicative expressions. For example, one can learn to interpret nonverbal communication, such as vocalizations, gestures, facial expressions, body language, level of energy, visual regard, or behavior excesses or deficits as indicators of preference or dislike. For students whose impairments significantly impede discernable communication, educational personnel will need to spend significantly more time with the person to determine the subtle ways in which the individual may be expressing preferences.

Getting to know and developing a deeper understanding of the student as a person is an extremely valuable outcome that educational personnel should pursue. Person-centered planning provides one of the most powerful, enjoyable, and rewarding ways in which to accomplish this. Person-centered planning is a storied approach to understanding the student and articulating individual circumstances and personal perspective. Conducted in a gathering of people who know and care about the student, person-centered planning includes the student's family, friends, edu-

ational personnel, and any others who might contribute to the process.

Person-centered planning provides a powerful tool for helping to identify preferences. In addition to identifying known likes and dislikes regarding activities, tasks, materials, settings, and events, person-centered approaches attempt to identify preferences (and potential preferences) for people, daily routines, communication, and interaction. Because it relies on illustrative vignettes and graphics to share and record information, and avoids jargon and professional language, person-centered planning supports the active involvement of students with severe disabilities in educational decisionmaking and planning. Rather than emphasize skill deficits and instructional needs, person-centered planning approaches aid in the identification of experiences and contexts that will help enrich the student's life. Intended outcomes of person-centered planning include helping the student to (1) develop and deepen relationships, (2) increase meaningful community participation, (3) assume valued roles and responsibilities, (4) increase personal competence, and (5) expand choice and control.

Teaching and Supporting Choice Making

The term *choice* has many definitions and (as discussed earlier) connotations. Thus, one must apply multiple perspectives when considering the importance of choice for children and youth with severe disabilities.

Choice is the act of choosing. In order to choose, one must have both the ability and opportunity to do so. Learning how to make choices is important and will usually need to be taught to children with severe disabilities. Of equal importance is the assurance that once individuals are taught to make and express their choices, those choices will be honored (within reason). This also implies that students should be permitted to choose whether they want to participate in or terminate an activity, as is appropriate to the student's age group, the activity, and the circumstances.

A choice can also be described as an option, that is, the right or freedom to choose. Rather than having choices made for them, as is often the case, children and youth with severe disabilities should regularly make choices that are developmentally appropriate for their chronological age. Such experiences are crucial to the development of those self-determined behaviors needed for transition plan-

ning and adult life. Preschool-age children regularly make a variety of choices on a daily basis; however, their choice making is carefully monitored and controlled by adults. In later childhood, adult control gradually gives way to guidance and support. Once students reach elementary school, they begin to experience situations that involve some degree of problem solving in making their choices. By middle school, students are able to identify goals and develop action plans to achieve them. Once students reach adolescence, their choice-making skills have evolved to include the achievement of more complex, long-range goals and the ability to monitor, evaluate, and change plans as is needed.

Choice also refers to a sufficient variety or an array from which to choose. This suggests that children with severe disabilities should be regularly exposed to and experience a variety of activities and settings that are stimulating, interesting, and shared by others of the same chronological age who do not have disabilities. Specialized, segregated educational settings and classrooms often do not provide such opportunities.

A choice is also something that is chosen. Most often, those things chosen in inclusive settings will differ in kind and degree from those chosen in self-contained special education classrooms. Thus, access to inclusive settings will provide additional opportunities for students with severe disabilities to further develop abilities in choice making that are critical to self-determination.

Finally, choice refers to care in selecting. This means that students with severe disabilities will require instruction and a sufficient number and variety of experiences in order to learn to consider alternatives as well as any consequences of the choice and choices that are being made.

Instructional Considerations

It is imperative that educational programs for students with severe disabilities address self-determination. The specific skills needed for self-determination must be taught and opportunities to use them must be provided on a regular basis. Skills to be taught include choice making, decisionmaking, problem solving, goal setting, and self-management. Students should learn to use these skills to monitor and evaluate their circumstances and performance, and take appropriate action if necessary.

Students must also be provided with opportunities to exercise self-determination. This means that students should have direct input into what it is they will learn and how they will learn it. They should be actively involved in the development and coordination of their IEP goals and objectives. They should be supported in participating in and contributing to the IEP process.

Students with severe disabilities must experience frequent and sustained successes and learn to be less reliant on others. This means that instructional goals must be tailored to the specific needs, circumstances, interests, and desires of each individual student. Teachers must use empirically validated instructional methods that promote skill acquisition, fluency, and generalization. Because students' participation in inclusive settings is critical to the development of self-determining behaviors, special and general educators should collaborate to ensure that students have opportunities to learn and use self-determination and choice.

SELF-DETERMINATION AND SYSTEMS CHANGE

The term *self-determination* is also being used to describe systems change efforts to reform community-based supports and services for children and adults with severe disabilities. The current system is tied to eligibility, which is based on the kind and degree of disability. Such a focus has created a system that, for the most part, is not responsive to individual needs and preferences. This is because most services are congregated, that is, they consist of group living, work, and recreational arrangements. An eligible person may only access what is available; from that person's perspective, what is available may not be suitable. Because the current system funds programs and not individuals, the individual may be forced to make a take-it-or-leave-it decision. While this description presents a worst-case scenario, it is the prevailing reality for most people with severe disabilities in the United States.

Under a self-determination model of service delivery, individuals with disabilities (and their families) will be the primary decisionmakers in the management of their lives, the services and supports they need and want, and the public funds available to them. This will create more control and ultimately more choice for individuals with severe disabilities

and their families, as they will be able to look beyond the existing service-provider system for support. In turn, service providers will become more flexible and responsive to consumer demands as they compete for consumer dollars.

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TRANSITION FROM SCHOOL

Transition is and should be the final chapter in a child's formal preparation for adult life; the final stage of preparation for community membership and the world of work. Unfortunately, however, transition is often one of the most difficult times in the life of a family with a child with severe disabilities. There are a number of reasons why this period is so often stressful for the family and for the child. First and foremost is the fact that completion of school means the end of the mandated public-school entitlement. With the early-intervention mandate, most children with severe disabilities have been eligible for educational services from the age of three years through the age of twenty-one in most states. Under federal legislation the right to a free appropriate public education is guaranteed and the rights of parents are protected by due process. Although most states do have adult services available to eligible youths who have left school, these programs are not mandated by law. As a result many families find that needed services are not available. Traditionally, adult services programs are often underfunded, resulting in wait lists.

Another challenge faced by families of youth with severe disabilities in transition is the difficulty they experience in learning and navigating the adult services system. After eighteen years of dealing with the public schools, with one set of rules, regulations, and nomenclature, parents are faced with having to learn how to access a variety of different agencies, each with their own eligibility, terminology, and services. Additionally, in many communities, adult services programs are administered by different individuals in different offices that have different geographic jurisdictions.

Even when families are able to figure out all of the complexities involved in identifying agencies,

establishing eligibility, and deciding on the types of services and supports their child needs, they may find that the preferred services are not available. A major problem with the current adult services system is that in many states large proportions of local and state resources are used to continue supporting outdated segregated service models such as sheltered workshops, adult day programs, and segregated living arrangements. As a result, insufficient resources are available for more contemporary service models such as supported employment or independent living.

The difficulties that youth with severe disabilities and their families experience have been well documented (Lou Harris and Associates 1994) and consistently showed a rather bleak outlook for these youth as they approach adulthood:

1. Limited student/parent participation/leadership in transition planning;
2. Unclear/undeveloped visions for post-school adult community membership;
3. Lack of functional skills related to the demands of adult community life;
4. Insufficient social skills, relationships, and support networks;
5. Frequent physical and social isolation and segregation from mainstream community life;
6. Large-scale unemployment, underemployment, low-status employment, and job instability;
7. High rates of referral, placement, and long-term maintenance in workshops and developmental programs.

These outcomes indicated that even through a free appropriate education has been mandated since the mid-1970s, many students were not leaving school with the preparation necessary to become integrated into the community as adults.

FEDERAL LEADERSHIP AND THE TRANSITION MANDATE

In the face of these data things began to change under the Reagan administration with leadership from Madelyn Will, then assistant secretary of education and the parent of a child with mental retardation. Legislation was enacted by congress providing for research, model program development, and state-wide systems change related to public-school tran-

sition services. Several different groups of researchers under the leadership of Paul Wehman at Virginia Commonwealth University; Tom Belamy at the University of Oregon; and Frank Rusch at the University of Illinois were instrumental in conducting research on transition, developing and validating effective transition models and practices, and disseminating their findings to the public and to congress. The *Individuals With Disabilities Education Act* (1990) established “transition planning” as a mandated part of the IEP. Will defined transition as follows:

Transition from school to working life is an outcome-oriented process encompassing a broad array of services that lead to employment. Transition is a period that includes high school, the point of graduation, additional post-secondary education or adult services, and initial years of employment. . . . The transition from school to work and adult life requires sound preparation in the secondary school, adequate support at the point of school leaving, and secure opportunities and services, if needed, in adult situations.

As can be seen from this definition, transition was conceptualized early on as a broad range of services and supports covering an extended period of time. Transition came to be understood as a process, beginning in the high school years and continuing past graduation thus providing a bridge to adulthood. Transition may be seen as consisting of three different periods: (1) the time leading up to transition (age fourteen to eighteen), (2) the time period during transition (age eighteen to twenty-one), and (3) the time period after transition from school (age twenty-one and over). During the time period leading to transition the focus of the child’s program should be balanced between being included as a full member of middle and high school classrooms and school activities, and being provided whatever other instruction on functional life skills is determined to be needed that cannot be provided within certain academic classes. During the actual transition period, and depending upon the preferences of the child and parents, community involvement and exposure should be intensified. This could involve regular off-campus trips for various instructional or related purposes. Some school districts have even developed temporary living arrangements in the

community where students spend periods of time with school district personnel learning to live in and manage their own homes. After transition from school is also a period of adjustment for the students and family. This is a time when any needed long-term follow-up services (typically to support employment or community living) need to be fully secured and stabilized. One issue that arises for many families after their children begin employment is how to negotiate the social security system. Another major decision that many families face after their children leave school is whether they will remain living at home or consider moving into some type of independent/supported living arrangement. These and other types of post-school challenges mean that many youth with severe disabilities and their families will continue to need supports and services well beyond the school years.

TRANSITION PLANNING

When the *Individuals with Disabilities Education Act* was passed in 1990 new regulations were added that required transition planning for all eligible students beginning at the age of fourteen. The following definition is part of the law:

The term “Transition Services” means a coordinated set of activities for a student, designed with an outcome-oriented process, which promote movement from school to post-secondary activities, including post-secondary education, vocational training, integrated employment (including supported employment), continuing and adult education, adult services, independent living or community participation. The coordinated set of activities shall be based upon the individual student’s need, taking into account the student’s preferences and interests, and includes instruction, related services, community experiences, the development of employment and other post-school adult living objectives, and, when appropriate, acquisition of daily living skills and functional vocation evaluation. (Sec. 602 [30])

Under these regulations school districts are required to include in the IEP, when the child is fourteen, a description of the type of curriculum the child will be studying for the remainder of high school. This

has the effect of bringing together the family and school to begin a discussion about the child's future. Sometimes these discussions follow a particular personal planning model or format (such as Maps, Path, or Personal Futures Planning). At this stage, well before the child leaves school, it is important that the parents, child, and teachers begin to develop ideas about the child's future adult life and to plan for the educational activities that will prepare the child. For many families it takes a long time and many different experiences in order to arrive at a plan for transition to adulthood that is suitable, realistic, and attainable.

During the time the child is fourteen to eighteen years old, a major point of emphasis for transition planning is career development, also a long-term process. For students with severe disabilities career development is more challenging because students do not benefit from traditional career counseling provided to general education students (most students with severe disabilities do not read or write and are essentially unable to engage in discussions of abstract concepts).

Career development for students with severe disabilities should involve a series of more concrete and functional activities and experiences, organized and arranged to result in the child leaving school with a clear path toward employment. Parents should be closely involved with the program throughout the school years so that at the time of transition they will have developed positive and realistic expectations for their child's future. Along the way, efforts should be made by the school to provide various career awareness activities, for the student as well as the parents. It is also important that the child be included with and has opportunities for interaction with nondisabled peers.

This is vitally important since we know from a plethora of research on the employment of people with disabilities that their inability to maintain employment is most often the result of their inability to get along socially, rather than their inability to learn the work. Along with learning social skills, students' curricula should be grounded in important and functional skills, based upon real life expectations and taught in practical ways.

Part of the instruction transition-age students receive should be conducted off the school campus in actual community settings, referred to in

the literature as community-based instruction (CBI). Teachers select sites based on the child's IEP goals; conduct a thorough analysis of those sites, including an inventory of activities and tasks performed there; bring the child to the site and perform an in-vivo assessment; develop an instructional plan based upon a discrepancy analysis (between the child's performance level and that expected in the norm); and subsequently do individual instruction with the child at the site until the targeted skills are learned or adapted. CBI could involve a number of skills domains including leisure/recreation, shopping, or vocational or job skills. Ideally, academic skills such as literacy and mathematics are integrated into the instructional routines and tasks to make them functional.

As the child approaches school exiting age, which is twenty-one in most states, extended training in a variety of work settings is conducted. Through a process of "rotational job sampling" students are exposed to a range of job types and work settings until a suitable potential career direction is identified. Under ideal circumstances the local vocational rehabilitation agency would be brought in to work with the child, family, and teacher while the child is still in school. Adult-agency personnel would assume responsibility for additional training and extended support in a paid job and the child would transition from school, be employed, and have the support of an adult service agency.

In addition to career development there are other important areas of transition planning, services, and support including continuing or adult education, community living, community leisure and recreation, and accessing other types of health or social services. The IEP team, with the assistance of relevant other outside agencies and with participation of the child and family, works to identify and secure the needed services and supports prior to the time the child exits school.

In order for the transition planning and services to be effective, parents and the student should be involved directly. Additionally, longitudinal efforts should be made to teach the child choice making, self-determination, and self-advocacy skills so that these skills may be used during transition and beyond, into adulthood.

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BEYOND SCHOOL—COMMUNITY LIVING AND EMPLOYMENT

Upon exiting secondary school, which generally occurs around the age of twenty-one, most young adults with severe disabilities will continue to require support and services throughout their lives. Supports may be necessary to assure health, safety, and well being, and to facilitate meaningful participation in adult life in the community. Supports can take many forms and may be available from a variety of sources.

Supports may be formal, provided systematically after careful planning, forethought, and training. They may be informal, that is, casual, spontaneous, or uncomplicated. Supports may be provided by service agencies and organizations, or by friends, family members, neighbors, co-workers, and acquaintances. Supports may require the use of specialized equipment, intervention programs, and expertise, or, they may require nothing more than the use of an ordinary, everyday object, spending a little extra time with someone, or the use of some common sense. Members of their families need support as well.

Regardless of the kind and degree of supports that are provided or who provides them, supports to adults with severe disabilities should help them assume adult roles and responsibilities and should promote their status (and the recognition of that status) as participating and contributing members of the community.

ADULT SERVICES

The formalized system of community-based supports for people with developmental and severe disabilities is referred to as adult services. These services are generally provided by public-sector, nonprofit, or for-profit agencies and organizations, and sometimes by individual entrepreneurs. Adult services include a variety of individual and group support or service models in housing, employment, transportation, personal assistance, leisure/recreation, and community participation.

Community-based adult services for individuals with severe disabilities began in the United States following the end of World War II, when the pre-

dominant service model was institutional care. For the adults who remained in the community with their families, there were virtually no services available. The parents of these adult children formed advocacy organizations, such as The National Association for Retarded Children (now known as The Arc) and United Cerebral Palsy, which in turn developed sheltered workshops, day activity centers, and recreational programs.

In the 1970s, large numbers of institutionalized adults and children moved back to their communities of origin, in part because of growing concerns about the quality and appropriateness of institutional care. The small network of community-based vocational and day programs experienced tremendous growth as it accommodated individuals arriving from the institutions. Existing organizations expanded the scope of their programs to provide residential services; many new agencies were created for this purpose as well. As institutions continued to draw heavy criticism, attention began to focus on the benefits of community placements. Even though the results of comparison studies were inconclusive, the superiority of community-living arrangements over institutions became widely accepted.

As the adult system grew over the next twenty years, so did concerns about the services provided by it. Although community residential, vocational, and day services were generally considered to be preferable to institutional care, research conducted to measure consumer satisfaction consistently found that users of community-based services expressed dissatisfaction with their lives. Outcome and efficacy studies of group homes, workshops, and day treatment centers yielded some problematic results (Bellamy et al. 1986; Kishi et al. 1988). Though community-based services were seemingly free of the abuse, neglect, and poor living conditions that had been associated with some institutions, studies indicated that community programs were isolating and ineffective.

For example, consumers attending sheltered workshops and work activity centers rarely moved on to real employment. Neither did they experience improvement in job and work-related skills. Workshop participants were paid subminimum wages based on individual productivity; some earned less than one dollar per week. Many vocational and day-program service users had not chosen to attend these pro-

grams—their participation was mandatory as per local policy or state regulations. This scenario does not depict circumstances that are isolated to some provincial or economically depressed locale, but rather, illustrates the general state of affairs in vocational and day programming for individuals with severe disabilities across the nation at that time.

The majority of individuals attending vocational and day programs lived in group homes. Consequently, they lived with the same people with whom they worked, and they recreated with the same people with whom they lived and worked. They regularly shared many other life routines and events such as attending church services, celebrating holidays, shopping, and going out to eat with the same people with whom they lived, worked, and recreated, day in and day out. Again, these circumstances were not atypical.

The preceding descriptions led to some disturbing conclusions. Though many adults with severe disabilities were living in the community, they were not necessarily a part of the community. They were experiencing a group life, based on the perceived needs of a collective population (i.e., people living in the group home, adults with severe disabilities), instead of one in which they were able to exercise control over day-to-day and significant life events that were reflective of their own preferences and desires. The direction of their group lives appeared to be both influenced and limited by prevailing beliefs and expectations about people with severe disabilities and what they can accomplish.

CHANGING BELIEFS ABOUT DISABILITY

New ways of thinking about people with disabilities began to emerge that challenged the way adult services were conceptualized and provided. People with disabilities can be viewed from a person-centered perspective, that is, they are people first and it is important to get to know and understand each of them as individuals. The primary concern should not be on disability; this tends to connote that there is something wrong that needs to be fixed. Of primary interest should be discovering and appreciating the uniqueness of each person; this tends to draw attention to what people have in common with one another and what they can do. The focus on disability

separates and isolates people with disabilities; the focus on the person brings people together.

This does not mean that disability is unimportant or that it should be overlooked. Disability is secondary to the person; it does not define who she or he is as a human being. The person is not the problem. Instead, attitudes and misconceptions about disability (and people with disabilities) can create barriers to their acceptance and participation as members of the adult community. Low expectations can limit the opportunities that are afforded to them and prevent them from exercising control over their lives. Diminished opportunity and lack of control limit personal growth, which negatively affects competence and function. A vicious cycle ensues. If one believes that the negative effects of disability can be attributed to the interaction between the individual and the physical or social environment, it stands to reason that removal of those barriers can have a positive affect on the capacity of the individual.

These new ways of thinking drove two different kinds of change in the adult service system. Some people who shared this positive, capacity-focused view began to think about how changes to the organizational structures of adult service agencies could eliminate the separation and isolation of people with disabilities and contribute to more meaningful lives for them. From this emerged person-centered planning.

Others with this same perspective began to think about totally new kinds of services that could more fully support people with significant disabilities as competent, contributing members of the adult community. Soon new models and approaches began to appear, such as supported employment and supported living.

PERSON-CENTERED PLANNING

A central premise of person-centered planning is the expectation that change will occur, not to the individual, but in the systems and processes supporting the individual, so that meaningful lifestyle change occurs for the person. Person-centered processes seek to develop a shared understanding of the person, framed from a capacity perspective. This means that those who care about and provide services to the person strive to discover his/her strengths, abilities, gifts and talents, and those positive characteristics that draw others. Personal deficits and differences

are not the focus of interest; intervention is not the intended outcome. Rather, person-centered approaches seek to develop an understanding and appreciation of the person; identify what may be missing in the person's life; and help the person identify how she/he might want to live, work, or may want out of life—then commit to action to help the person attain it in ways that are meaningful and satisfying to the person. Major outcomes of person-centered approaches are framed in terms of helping people to develop and expand reciprocal relationships and personal networks; have more opportunities to make choices and exercise control in their lives; assume valued roles in the family, workplace, school, and community; demonstrate competence; assume valued roles and responsibilities; increase community participation; and be recognized and respected. A change in any one of these areas can dramatically improve a person's life.

There are many different person-centered planning approaches available. They can be used for many different purposes, for example, to help a person make a change in his/her life; to help a person achieve a dream or an important goal; to explore why a person is experiencing behavioral difficulties; to help determine what kinds of supports a person might need, and so on.

OPTIONS FOR SUPPORT AND SERVICE DELIVERY

The emergence of two new models of service delivery, supported employment and supported living, are based in one simple idea: instead of placing people in specialized residential and vocational programs and facilities, provide them with supports and services that are relevant to their individual needs, so they can have real jobs and live in real homes (typical living and housing arrangements in the community). Take the service (or more appropriately, the support) to the person, rather than take the person to the service (or more accurately, the program). The following are very powerful but underutilized ways of promoting membership in the community.

Supported Living

Until recently, the alternatives available to adults with severe disabilities who wanted or needed to live in

the community were very limited. Group home arrangements were and continue to be the prevailing residential option. They vary in size, accommodating two to fifteen persons. Group homes generally provide the advantage of twenty-four-hour supervision, and they are a moderately inexpensive form of housing. But as discussed earlier, group homes place limitations on one's choice, control, and privacy.

Supported living services provide a variety of supports to individuals living in the community. Supported living is not a residential or housing program; it provides personalized support needed by an individual in order to live in his/her own home or apartment. Funding for residential and supported living services is totally separate, thus allowing for a flexible array of housing and support options. Consumers can choose where and in what kind of home to live. If they prefer to live with others, it can be with people whom they have chosen to share their living quarters. Supported living services are designed on an individual basis. The kind of services and the number of hours of service provision vary for each individual. Some of the services available in supported living arrangements include attendant care, homemaker services, transportation, and assistance in connecting with the community.

People utilizing supported living services have more choice and control over their own lives than do those living in group homes. They can make and keep their own schedules, determine daily routines, and choose the kinds of activities in which they engage. They have control over who will live and work in their home. As their needs or preferences change over time, so can the type and intensity of the supports provided.

Supported Employment

Supported employment is competitive employment in an integrated employment setting for individuals with severe disabilities who, because of the severity of their disability, need some type of ongoing support and services to successfully perform and maintain their job. Supported employment reflects the assumption that skills are more readily acquired in the actual settings in which they are to be used. Therefore, supported employees are provided on-the-job training by fellow employees, or, as most often is the case, by professional job coaches.

There are four separate components of supported employment: individual assessment, job development, on-the-job training, and ongoing follow-up and support. The purpose of assessment is to ascertain the individual's strengths, abilities, aspirations, and preferences, and the conditions under which he or she is most successful. While traditional vocational assessment has not proven to be useful for people with severe disabilities, person-centered planning processes are an effective means of gathering and organizing the needed information. Since many individuals with severe disabilities have had limited exposure to the kinds of job and working conditions available, assessment may include on-the-job work exploration activities, during which the prospective employee can learn about the responsibilities and working conditions of various jobs, either by observing or trying them out in the workplace.

During the job-development phase, the information that has been gathered about individual interests and characteristics is carefully matched to the demands, conditions, and culture of a particular job. This may entail negotiating with employers to create or modify a position to match an individual's personal characteristics and situation, or simply helping the individual procure an existing job that matches the identified criteria.

Once a job has been procured, on-the-job training is provided and systematically faded as the worker learns to perform the job duties independently. Supported employees are paid the prevailing wage during their training. Once training has been completed, ongoing support is provided.

NATURAL SUPPORTS

To successfully perform their job duties and maintain their employment, individuals with severe disabilities will need support, either on an intermittent or regular basis. Rather than rely on intervention delivered by a job coach, it is recommended that supported employment personnel arrange for the development of natural supports. Natural supports are resources that naturally occur in the workplace (e.g., co-workers or some form of employer-provided train-

ing and assistance that is available to workers in that particular worksite or business). Natural supports also include the use of specially designed modifications or interventions that fit the physical and social context of the workplace. Additionally, natural supports can be applied to work-related activities and functions, such as getting to work, cashing one's paycheck, completing and updating employer-generated paperwork, and participating in social events associated with the workplace, among others.

Natural supports can be used successfully in any type of setting or situation when the need for ongoing support exists or is anticipated. Person-centered planning is an excellent tool for identifying current and future support needs and it facilitates the generation of creative and practical ways in which support can be provided.

CHANGES IN THE LIVES OF ADULTS WITH SEVERE DISABILITIES

Positive outcomes have been reported for people with severe disabilities who work and live in more typical settings and circumstances. There is ample research to indicate that people living in the community with supports can experience an improved quality of life across a number of areas, such as housing, economic status, and work. Families and consumers have both reported higher levels of satisfaction with services, and feel these approaches are beneficial because they increased family involvement and physical and psychological well being. Consumers have reported higher levels of lifestyle satisfaction and self-determination, as such arrangements provide many opportunities for decisionmaking and they are conducive to the exercise of personal choice.

Despite compelling evidence that quality of life is better for those in supported employment and typical community living-settings, the majority of people with severe disabilities continue to live and work in segregated settings.

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MENTAL HEALTH AND EDUCATION

Contemporary Western society has increasingly come to recognize that children and adolescents have psychological problems that can be treated through the methods of psychiatry and clinical psychology. As academic demands on children in schools grow, children with psychological difficulties have greater trouble in coping, and there is more pressure on parents to have their children assessed and treated by mental health professionals. Many people are ambivalent about this trend. On the one hand, we are glad to be able to identify problems and mental disorders and treat them appropriately in ways that help children perform better in their studies and avoid the dangers such as low self-esteem that come with most enduring psychological problems. Most obviously, if we have a way to help children who are suffering, we should use the advances of medical science to relieve that suffering. On the other hand, many are concerned that through labeling more children with mental disorders and putting them on medication or in some forms of therapy that have not been fully studied and proven safe and beneficial in the long term, we will be increasing levels of bureaucracy and surveillance of family life in an effort to ensure conformity to standards that are hard to measure and are of questionable value. The increasing rates of diagnosis of children and adolescents with mental disorders are sometimes interpreted as a symptom of our society's decreasing tolerance for individual difference and the normal difficulties associated with growing up.

THE RECOGNITION OF CHILDHOOD AND ADOLESCENT MENTAL DISORDERS

Parents and teachers faced with a child with emotional or behavioral problems are placed in a diffi-

cult position because it is hard to know if and when to turn to the mental health profession. This difficulty is compounded by the huge variety of opinions and different and sometimes conflicting "facts" that are stated in different television programs, popular books, Internet websites, and even in literature provided by professional associations. (See the first entry for more detailed discussion of this issue.)

This introduction will spell out some of the issues relevant to negotiating the maze of information and ideas concerning child and adolescent mental disorders. The entries that follow present the most up-to-date information about current mental health practice and the data behind that practice. The entries are not exhaustive of all mental disorders and do not include all the relevant information concerning the disorders they do cover. They do cover most of the main mental disorders and they provide information that readers can use to follow up.

THE OBJECTIVITY OF DEFINING MENTAL DISORDERS

One of the central questions arising in child and adolescent psychiatry is the validity of the diagnostic categories. In short, the question is whether the criteria used by clinicians in assessing young people do in fact mark out real disorders. The fact that rates of diagnosis of many disorders have been increasing leads many to ask whether the numbers of people with those disorders are indeed increasing, or whether the increases are due to shifting definitions or interpretations of those definitions. If definitions are changing, we can ask whether those changes are scientifically and medically justified, or whether they are more related to changing social trends and values. As with many other medical disorders, most mental disorders are not diagnosed through laboratory tests but rather through signs and symptoms

associated with the disorders. For mental disorders, the criteria used are mainly the behavior, emotions, and reported thoughts and feelings of the patient. While there is a good deal of agreement these days among clinicians about when a person qualifies for a diagnosis of a mental disorder, and modern diagnostic criteria must be proven to be reliable before they are adopted by professional organizations, the validity of the criteria as markings of a genuine disorder is a separate issue. Some have worried that the divisions of mental disorders into different groups such as mood disorders, anxiety disorders, schizophrenia, adjustment disorders, and personality disorders is at least rather arbitrary. When using criteria for children and adolescents, there is the added complication that they are developing both physically and psychologically. Actions, thoughts and feelings that might be symptomatic of a disorder at one age may not point to a disorder in a child at a different age. Furthermore, there is considerable variability among individuals in how they go through the development process, and this too can make it more difficult to spell out with objective criteria when to diagnose a mental disorder.

The American Psychiatric Association publishes *Diagnostic and Statistical Manual of Mental Disorders*, which is now in its fourth edition (DSM-IV-TR) (APA 2000). The DSM is the document generally referred to when justifying a diagnosis, and it is the document most often used by various health management organizations and health insurance companies. It has a chapter devoted to "Disorders Usually First Diagnosed in Infancy, Childhood, or Adolescence." The diagnostic criteria for most other disorders listed in this manual make little or no distinction between the appearance of the disorder in adults and young people. Each edition includes changes to some of the descriptions and criteria of disorders; sometimes, old diagnoses are dropped from the manual, and more often, new diagnoses are added. The process by which this decision is made includes both scientific research and consultation with clinicians and other professionals. Nevertheless, not all experts believe that the DSM provides the best categorization of child and adolescent mental disorders; suggested alternatives range from slight to radical revisionings of the nature of disorders in young people. Despite the disagreements among experts, the area of child and adolescent psychology and psy-

chiatry is relatively stable and indeed resembles much of adult psychology and psychiatry. Young people with individual psychological problems that significantly interfere with their family life, peer relations, and school functioning can generally receive a diagnosis of mental disorder from a health care professional, and treatments very often center around cognitive behavioral psychotherapy, medication, and family education. Occasionally, teachers play an important role in the diagnosis and treatment of mental health problems.

THE IDEOLOGY OF CONCEPTUALIZING MENTAL DISORDERS: BRAIN DISEASES, FAMILY PATHOLOGIES, AND SOCIAL PROBLEMS

In recent decades, there has been a growing tendency to describe serious mental disorders as brain diseases. This has been partially justified by growing scientific evidence of differences in brain structure and functioning between those with and without mental disorders. However, it is important to understand that this tendency has also been driven by a wish to move away from older models of childhood mental disorders, especially popular in the 1950s and 1960s, as fundamentally psychological problems caused by inappropriate parenting or dysfunctional family dynamics. Families often experienced great shame in having a child with a mental illness, and this shame was compounded when they were led to believe that they were the cause of the illness. Advocate groups for the mentally ill such as the National Alliance for the Mentally Ill (NAMI) have stressed that families should not be blamed for the mental disorders of their children, and they have embraced the understanding of mental disorders as brain diseases. This biological framework is thought to be less stigmatizing than psychological conceptualizations of problems.

Given the stigma and shame that still comes with psychological problems, clinicians, educators, and families need to be extremely sensitive to the language that is used to describe the people with those problems. Nevertheless, it is also important that choice of language does not distort the correct scientific understanding of mental disorders. It is helpful to keep in mind that psychologists and

philosophers have not found any sharp distinction between the psychological and the biological, and that the causes of most mental disorders are still in fact not well understood. While some older theories such as Freudian psychoanalysis have declined in popularity due to lack of supporting scientific evidence, and there is strong evidence for a biological and especially a genetic component, scientific psychiatry is still far away from a complete well-confirmed account of the causes of mental disorders.

Furthermore, as educators well know, there is a strong link between the psychological and academic difficulties of students and the family and social conditions in which those students live. A young person's self-esteem, ability to focus, propensity to substance abuse, ability to relate to peers, and self-motivation are strongly influenced by family, peers, and life outside of school. Many social commentators have argued that problems that are generally identified as psychological or even mental disorders have their origin in the larger social environment. To speak of these as primarily social problems is to distort their nature. It may be appropriate to nevertheless treat the affected young people with the tools of psychology and psychiatry, but we should keep in mind the underlying social factors that caused or worsened them and form social and educational policies that aim to address those factors. (It can be helpful to remember that exactly the same is true of problems that are obviously medical, such as childhood obesity and type-II diabetes.)

THE GROWTH OF CHILDHOOD MENTAL DISORDER

Child and adolescent psychiatry only really started in the twentieth century and it only became professionalized after World War II. While cases of childhood mental illness were recorded in the eighteenth and nineteenth centuries, there was little general recognition of the problem and even less readiness to treat it. It was mostly seen as a private problem to be dealt with at home (Neve and Turner 2002). Since the 1940s, the rates of diagnosis of mental disorders in young people have increased and, correspondingly, so have the rates of psychological and psychiatric treatment for those problems. One study examined community treatment data from 1987 to 1996 and found that the use of psychiatric

medication in young people has increased by two to three times (Zito et al. 2003).

INFANTS AND VERY YOUNG CHILDREN

Currently, one of the main controversies in child psychiatry is in the diagnosis of babies, infants, and very young children with mental disorders. While the rates of diagnosis for this population are still low, there is some concern about the very possibility of making a reasonable diagnosis in the very young when they are pre-linguistic or have only very limited ability to report their feelings.

PROBLEMS IN GETTING CORRECT AND APPROPRIATE TREATMENT

Given the difficulties in establishing definitive diagnoses for mental disorders in young people, it is not surprising that in everyday practice, there is considerable variation in the diagnoses that individuals can receive from different physicians. In one survey of two hundred articles on severe childhood mental illness published between 1809 and 1982, a study of the case reports showed that about a half of the children who should have been diagnosed as manic had originally received another diagnosis (R. A. Weller et al. 1986; see also E. B. Weller et al. 1995). Much of the diagnosis of young people is done not by child and adolescent psychiatrists but by general practitioners and nonspecialist psychologists, and this compounds the problem of inaccurate diagnosis. If the diagnosis is inaccurate, then it is likely that treatment will also be inappropriate.

Even when there is no dispute about the diagnosis and appropriate treatment for children and adolescents with mental disorders, families often experience difficulty in getting appropriate treatment in the United States. According to one approximation, of the estimated 42–45 million Americans who are uninsured, about 17–18 million are children (Schreter 2004, 62). Many states provide care for children with mental illnesses when their parents cannot afford treatment, but this varies from state to state. Even for those who are covered by managed care or health insurance, mental health services may be inadequately provided. One authoritative commentator has recently expressed the problem as follows:

We are now in the age of managed care. Child and adolescent mental health and child, adolescent, and adult health care are being examined in terms of non-existent standards of cost-effectiveness. Poorly designed and conducted outcome studies are used to determine cost-effectiveness. It is clear that any concern for adequate health and mental health care for children, adolescents, and adults is being replaced by a primary concern for cost containment. (Berlin 2004, 9)

Thus there are powerful reasons to be troubled about the treatment that young people receive. It is often wise for parents and guardians to engage in self-education and to fight hard to ensure that their children receive the best possible treatment. At the same time, there are dangers in parents assuming that they know more than clinicians or acting on unreliable sources of information.

TOPICS NOT INCLUDED

The entries included in this chapter, in combination with the mental disorders discussed in other chapters of this encyclopedia, cover most of the main mental health problems of children, but it is not an exhaustive list. The selection is not meant to imply that other disorders are not as important.

There are also issues facing educators and third parties about when to make attempts to intervene in families to help children or adolescents with psychological problems. Of course, it is always possible to give advice or suggestions to parents and sometimes parents will follow through on them. One of the challenges facing educators is communicating with parents about their children's mental health problems in nonjudgmental ways. Sometimes such efforts are unsuccessful. Except when young people are in danger of abuse from family members, it can be very difficult to intervene in families. Parents generally have rights to determine their children's medical care unless there is risk of severe or permanent damage. Laws vary from state to state, however, and so full discussion of this issue would take up more space than available here.

Finally, one major concern, especially for children and adolescents who have prescriptions for medication or are seeing a therapist, is finding ways to ensure that they have a positive attitude towards the treatment and

are willing to keep up with it. Again, this important issue is beyond the scope of this chapter.

Christian Perring

INFORMATION SOURCES ON CHILD AND ADOLESCENT MENTAL DISORDERS

Over and over again, parents of patients come to me, a child psychiatrist, with articles that they have read, or websites that they have found that have implications for their children, whom I am evaluating or treating for psychiatric disorders.

It is wonderful and speaks well for the future of the child when parents are interested enough to educate themselves in these matters. I must say, however: *ca-veat emptor!* A great deal of the advice available in print and on the Internet derives from misinformation. It is usually well intended, but it is often fallacious.

As an egregious and potentially lethal example, let me take the case of an "organic" agent currently marketed with some intensity on the Internet. The ads state that this medicine is wonderful for people with "ups and downs" or mood swings. The active ingredient in this agent is lithium. Lithium continues to be perhaps the best medicine available for the treatment of people with bipolar disorder. It is a very dangerous medicine and can cause thyroid and kidney problems. Sometimes it causes severe neurological problems. The good news is that, if lithium levels and thyroid and kidney status are monitored through blood tests, the adverse effects can be largely avoided and the medicine can work extremely well. Buying this medicine from the World Wide Web and using it without careful medical monitoring could cause disaster. Giving this medicine to a child who has mood swings (as most children do) could cause horrible problems.

SYNDROMES

As one examines the literature and the Internet sites, one realizes that the parents of young patients have access to a great deal of good and bad information about psychiatric disorders. A case in point is attention deficit disorder.

Attention Deficit Hyperactivity Disorder (ADHD)

Many books and websites point out, correctly, I believe, that this disorder is over-diagnosed. The diagnosis is made by teachers, friends of the family, parents, and physicians from almost all specialties. There are, in fact, rather rigid criteria for the diagnosis of attention deficit disorder as a clinical diagnosis. Parents who are completely convinced that their child has this disorder frequently go from physician to physician until they find one who agrees. Many parents of bright children who are doing well in school will also approach physicians, believing that better attention—even though baseline attention falls within the realm of normal—will help their child achieve better.

This may represent an initial surge of a push for “designer drugs” in the new century: a desire to have drugs to make normal people happier, smarter, and more fulfilled in many areas. Christian Perring (1997) has discussed this phenomenon. Perhaps this would be well and good—though serious philosophical and ethical arguments can be constructed against it—but the stimulants can have serious adverse effects, such as poor sleep, short stature, poor appetite, and eating patterns. They are not for the faint of heart or for normal children who do not need them.

Parents who have been informed by teachers that their child should be evaluated for this disorder often seek information in the printed and electronic literature. They may find excellent resources, or they may find polemical advice with distorted data. If one has a child with true attention deficit disorder, who could be seriously helped with medication, it is unfortunate to read that the medicines are “poisons,” which is certainly not the case. If one has a bright child without attention deficit disorder who is not achieving quite as well as one would hope, it is unfortunate to read that the *only* cause of such a problem is attention deficit disorder and that the child should be placed on medicine immediately: there are certainly many causes of poor school achievement.

Eating Disorders

If parents have a child who has been losing a great deal of weight, with a restricting eating disorder such as anorexia nervosa, there is a baffling array

of books and electronic media advice. Some of the books suggest that parents should “stand back” and not play any role in the child’s eating. (It is immensely difficult for ordinary, good parents to watch a child starve!) Other books, with equally credentialed authors, urge that parents come forth and “take charge” of the child’s eating. How are parents to know the best approach? If they go to the Internet, they may find one or more of a great many “pro-Ana” sites that promote anorexia nervosa as a healthy approach to life (even though it is in fact a deadly approach to life, with the highest mortality of any psychiatric disorder).

Childhood Bipolar Disorder

A young child may be ebullient at times and more negative at other times. This is completely normal developmentally, but parents who read a lot in an effort to learn about and help their children may think that the child has bipolar disorder. Bipolar disorder does occur in children. It is also, in fact, rare in children. I have very rarely seen a case of childhood bipolar disorder where a first degree relative (often several) does not have bipolar disorder. In a typical case of true bipolar disorder, a child is morose and depressed for at least several weeks at a time, and may make statements about wanting to be dead and may even make a suicide attempt such as impulsively running in front of a truck. These periods are interspersed with periods in which the child is truly “high,” ebullient, perhaps grandiose and out of touch with reality as others see it. Children with this condition usually respond well to medical treatment.

On the other hand, all children and especially young children have alterations of mood. It is very sad that normal children with mood alterations are diagnosed by some as having bipolar disorder. The medicines used to treat this disorder are complex and have a great many adverse effects. This condition is grossly over diagnosed. Sometimes, very well-meaning parents read about bipolar disorder on the Internet or in magazines or books and go from doctor to doctor until they find one who is willing to treat the child for this rare disorder. This is very unfortunate.

I recently cared for a twelve-year-old girl who did, in my opinion, have bipolar disorder. Her parents

were professionals and very highly achieving people. They cared immensely for this child. Her father had read almost everything there is to read about this disorder on the Internet, and would frequently tell the child, "I've been reading about this, and it's likely that the next thing that will happen is" Usually this terrible thing would indeed happen shortly after the verbal communication. The father seemed unable to understand the role of suggestion in the progression of his child's behavior and attributed all of it to the infallibility of his Internet resources.

SEPARATING TRUTH FROM FALLACY

Part of the problem we are facing is the reification of psychiatric syndromes. Clusters of behaviors do not necessarily imply a "disease," and many psychiatrists and psychologists would agree with me. Increasingly, from relatively ill-informed media presentations, parents are diagnosing a disease and are doctor-shopping until they find someone who will agree with them. I do not blame these parents: they have identified a problem with their child and are trying hard to get help, but the help may be worse than the initial condition.

I recently saw a little girl who was mildly retarded and quite hyperactive. Her well-educated single mother had briefed herself about possibilities on several websites, and had read many books. She had taken the child to many doctors. When I hospitalized this child, she was taking nine psychotropic medications each day—stimulants, mood-stabilizers, anti-anxiety agents, antidepressants, antipsychotics, and more. Ten days later, I dismissed her from the hospital taking a stimulant drug for attention deficit disorder, which she clearly had, and nothing else. Her mother marveled at how much better she was. Most of us would be "much better" if we were not on nine heavy-duty medicines with significant adverse effects!

Very caring parents of seriously afflicted children often develop websites about the child and/or the child's condition. I recently treated a young girl with severe autism. Her mother had put together one of the best websites on this disorder that I have seen. But for every excellent website, there is one with crackpot ideas about an approach to the disorder, and it is very hard for parents to discern which is which.

RESOURCES

Before going to websites, it is usually helpful for parents to go to a good, knowledgeable doctor, and educators are often in a position to recommend doctors who are expert at different sorts of behavioral problems.

The Web itself is useful for finding doctors. "Best Doctors in America" is helpful and lists physicians based on credentials and recommendations. In most states, the state Board of Medical Practice lists physicians who are in trouble for various complaints. Again, buyer beware.

There are some excellent books and websites about childhood psychiatric disorders. These are listed in the references section of this chapter, and I comment on some of them here.

Mina Dulcan and Claudia Lizarralde (2003) have written an excellent book about medicines for parents, children, and teachers, now in its second edition. Russell Barkley has written several excellent books about disruptive behavior disorders (see Barkley 1998, 2000), and Kathleen Nadeau (1997) has written an excellent book that complements some of Barkley's writing. David Mrazek (1993) has written a parents' guide to common behavioral problems in the first twelve years of life.

There are perhaps thousands of websites regarding childhood emotional disorder; several of them can be found in the references section of this chapter. Several of these provide general information. Except for the "Dr. Bob" site, which is a fine resource, all are sites maintained by impeccable professional societies and may be relied on. While the NAMI site takes a fairly strong position that psychiatric disorder in children is biological, it provides useful advocacy information and wonderful links to relevant and well-developed sites.

Some of the sites are important because they examine the interface between education and behavioral/emotional problems. Others are written and maintained for specific syndromes. Among the best of these are those for obsessive-compulsive disorders, attention deficit hyperactivity disorder, Tourette syndrome, and childhood bipolar disorder, among others. Of these, the attention deficit disorder site provides some information on so-called adult attention deficit disorder, which may be controversial—but the childhood part of this site is generally

accurate. The childhood bipolar disorder site is wonderful, since it is quite interactive and also makes the repeated point that not all mood instability in children is bipolar disorder.

Sites of local academic medical centers can be especially helpful to parents and educators. Four of the best of these are included in the references section.

A warning: websites (and books) often can get out-of-date. Information about childhood psychiatric disorders is increasing very rapidly. Users should ascertain that the sources they are using are current.

I recently cared for a seventeen-year-old girl in the hospital. She weighed sixty-two pounds. She was very ill with Anorexia Nervosa. From misinformation gleaned from several websites her parents believed she had a severe gastrointestinal disorder, which had been ruled out at four medical centers. Because of misinformation on several websites, they removed her from our medical center, although I believe we could have treated her effectively. This also occurred at the other three medical centers, which could also have treated her effectively. This is a potentially tragic situation.

I hope that educators can help parents find useful information. I hope, too, that educators will not promulgate misinformation based on their favorite websites. They have an obligation to discern knowledge that has some research base. More importantly, I hope that they can discuss syndromes with parents so that the enormous potential harm of misinformation is not spread further.

Lloyd A. Wells

THE ROLE OF FAMILY AND COMMUNITY IN TREATMENT

For many years, psychiatry was different from other specialties in a major respect: it did not have accepted somatic methods of treatment. In the twentieth century, such methods of treatment as psychosurgery and electroconvulsive therapy were introduced, but these were applicable to few patients and “the talking cure” was the predominant approach to treatment for many decades. With the introduction of lithium and chlorpromazine and, later, the tricyclic antidepressants,

pharmacological therapy became part of psychiatry’s arsenal. With the later introduction of many medicines with relatively minor side effects, medical treatment of many common psychiatric illnesses became possible.

Ironically, as the rest of medicine moved away from a traditional medical model of illness and embraced the biopsychosocial model of George Engel (1980), many psychiatrists embraced the older medical model. This move was greatly enhanced and reinforced by “educational” efforts of pharmaceutical companies, who manufacture the medicines, and by the insistence of many managed care companies that only pharmacological approaches would be reimbursed.

CASES

Thus, we have an ironic situation, in my view, in which many psychiatrists only do “med management” or see “med checks.” (Even the language is diminishing!) Yet patients come to us with enormously complicated situations, and this reductionistic approach simply doesn’t work. The following are two cases.

Case One

A Cambodian boy, fourteen years old, was presented to our child and adolescent psychiatry unit after having been brought by the police to the Emergency Room. He had purchased a gun and was in the process of shooting himself when he was apprehended, after his friends had become concerned. When I first interviewed him he was extremely depressed and told me that he was having auditory hallucinations, which told him to kill himself. He also believed that he had been “a very bad little girl” in a past life, and that his current depression was a punishment for that.

His mother was dying of cancer and was unable to come to see him. He provided a great deal of the in-home care for his mother. His father had moved his wife, the patient’s mother, to Minnesota to be near her own mother. He himself worked at a job in Illinois and had to drive several hundred miles twice each week to be at his job. He was absent, because of his work, for the first two days of the patient’s hospitalization.

When I finally did get to talk to the father I

learned that all of the patient's family believed in reincarnation, though the idea of expiation in this life for sins of a past life were not a part of the family's belief system. The father also believed that mental illness was a condition caused by spirit possession. He absolutely refused to have his son treated with medicine, which the boy needed, and he refused any follow-up care for the boy after discharge.

The staff of the unit and I worked very hard with the father (and the boy). We explained our very different views of mental illness to him. Over a period of three days, he became quite interested in our beliefs and agreed to a trial of medicine for his son and to outpatient appointments for him. His county's social services were able to provide some in-home care for the boy's mother, which will be ongoing. Social Services also agreed to check on the boy regularly, at home and at school. Personnel at his school had been unaware that he was so troubled and offered to help substantively.

The patient himself improved and was no longer suicidal when he left the unit after five days. But his insurance company refused to pay for the last three days of this hospitalization because its protocol insisted that such a patient should have medicine initiated on day one, and "parent teaching" completed by day two. I thought it had been quite remarkable that we achieved as much as we did by day five, but the insurance company firmly disagreed and denied any payment after the first two days.

This case is illustrative of much that happens in inpatient child and adolescent psychiatry in the United States. Had we sent the boy home after two days, he would have been no better, and his family would have been no more understanding of his plight. There would have been no community support for him.

Case Two

A fifteen-year-old girl was admitted because of major depression, for which she fulfilled diagnostic criteria. There was a strong family history of major depression on both sides of her family, with a good response to antidepressant medicines.

In addition to the family history, however, the girl was living in horrific conditions. Her mother was very ambivalent toward her. Her mother's boyfriend,

who lived with the patient and her mother, was a very violent man. When he became angry with the patient, which was frequently, he did such things as beat her about the head with a telephone. Indeed, he served time in prison for assaulting the girl, but was back in the home, hitting her again, at the time she was hospitalized.

THE BIOPSYCHOSOCIAL MODEL

The biopsychosocial model of illness, proposed by George Engel many years ago, fits very well with these two cases and should be an important part of formulation in child and adolescent psychiatry. Ironically, this approach has been widely adopted in medicine and is a cornerstone of the curriculum in most medical schools. Many child and adolescent psychiatrists, however, do not use it. It argues that all illnesses—in any specialty—have biological, psychological, and social roots and sequelae, and that one must consider biological, psychological, and social factors in order to effectively treat these syndromes. This model is easily applied to both of the cases I have just described.

In the first case, biologically, one can speculate that the boy was dealing with a neurologically mediated depression. Though the biological etiology of depression has not been entirely elucidated, we know that this type of depression runs in families and likely has some genetic basis. Indeed, the boy's father told us that he had had very similar symptoms as a young man. There is some evidence to suggest that this type of depression is caused by relative deficiencies and/or excesses of certain neural transmitters in parts of the brain, though much work remains to be done.

Psychologically, the boy was dealing with his perceived need not just to care for but somehow to save his desperately ill mother and to fill his father's role in the family during the father's absence at work in a different state, many hours away. He had a strong sense of himself as a weak person and an ineffective one.

Socially, the boy was dealing with a great many issues: a move away from his childhood home, efforts to start a new school with peers who knew nothing of his culture and were often highly prejudiced, his own poor cultural fit with his very traditional family—he was caught between two cultures and didn't think he fit well in either—as well as his

mother's rapidly deteriorating health and his father's absence.

As for the second case, the girl had an incredible family history of depression on her mother's side, with a great many relatives who were or had been depressed and a grandfather, aunt, and uncle who had all killed themselves. The phenomena associated with her depression are those we believe to be related to biologically mediated depressions.

Psychologically, she dealt with many issues. She had very poor self-esteem and viewed herself as a worthless person—and this view of herself preceded her depression by many years. She had come to believe that she deserved the horrific abuse meted out by her mother's boyfriend.

Socially, she was on the fringe. The family had no money and was frequently evicted from low-rent apartments. Her peer group consisted of adolescents with similar backgrounds and dilemmas and was heavily involved, as was the patient, in alcohol and drug abuse and promiscuous sexual behaviors. There were no positive adults in this girl's life.

Once one begins to formulate a case using a biopsychosocial model, it is possible to develop a rational approach to treatment using the same model.

In the case of the boy, treatment with an antidepressant medicine was highly warranted, biologically. Psychologically, he will need psychotherapy, which addresses his sense of deracination and ineffectiveness. Socially, he will benefit a great deal from county-provided case management, which will help him get to his appointments. Social Services will also provide an in-home aid to help with his mother's illness, and it will help his father try to acquire a job closer to home.

The girl's case is similar, in many ways. She is taking an antidepressant medicine. Her drug and alcohol abuse interfere with the efficacy of the medicine and may well worsen the depression, and she is getting help with that problem as well. Psychologically, she will get—and badly needs—psychotherapy over a long period, as well as family therapy with her mother and younger sister. Socially, the mother's boyfriend violated his parole by again beating the patient with a telephone and he is back in jail. If the mother opts to have him return to her home after his term is finished, the girl will be placed with a relative or in foster care. County Social Services are also sending someone to the home twice each week to supervise its safety.

MORE SUBTLE SITUATIONS

Let me present a third case. The patient is a thirteen-year-old girl who presented with a fear of being in public, especially at school. This fear is longstanding but has been getting worse. She feels harassed by a few peers at school, and many others make fun of her for her shyness and avoidance, the abruptness of some of her mannerisms and comments, as well as her poor fit with the norms of early adolescent dress and style. She saw a psychiatrist who correctly diagnosed social anxiety disorder and placed her on a medicine that is usually helpful to people with social anxiety disorder.

Nothing changed very much, and four months later the girl made a serious suicide attempt and nearly died of an acetaminophen overdose.

In our hospital unit, she was socially awkward and very bright and creative. She found it hard to conceptualize a good future.

I spent a lot of time with her parents. Her mother, too, was a very anxious person, and a highly dependent one. Her father was passive and tried to be uninvolved, often pacing the hospital hallways during visiting hours, rather than spending them with his daughter. The mother projected many of her own issues onto this girl: "She's going to have a bad marriage"; "She's going to view herself as worthless and unloved," and so on. Both parents predicted that the girl would commit suicide before she was fifteen, with the father saying, "I've just accepted it—she won't live to grow up."

The first two cases presented here demonstrated overt social problems, but this situation is more subtle and in some ways more typical. The parents are well-intended people who care for their daughter. The initial psychiatrist who saw this patient, months before her suicide attempt, did a reasonable evaluation and correctly diagnosed social anxiety disorder, but other features of her syndrome were not clear to her. The choice of medicine was reasonable, but it was not enough.

Psychologically, this girl has a very heavy load to bear, with conscious and unconscious parental expectations that grow out of their own pathologies, caring as they are.

Socially, she is an outcast at school and truly hates it in spite of her high intelligence and achievement.

A reasonable approach to this patient is to treat

her with a powerful anxiolytic medicine but also to engage the parents in their own therapies (which they have agreed to do), as well as some family therapy to include the girl. I had two lengthy and useful discussions with the patient's middle school principal, who did a thorough investigation and determined that she is in fact being bullied and harassed. The principal promises to deal with these issues definitively. This will not make school a wonderful place for the girl, but it is a start. It is particularly important to speak with parents and school officials very directly and honestly in these situations.

FRAGMENTATION OF CARE

The mental health care of children has become fragmented in the managed-care era. Even when child and adolescent psychiatrists are able to evaluate a child comprehensively, the treatment is often broken up, with a psychiatrist managing the medicine, a psychologist or social worker—or, too often, someone without credentials—managing the therapy, and county workers managing the social aspects of the case. Too frequently, these different providers do not even talk with each other about the patient and her or his progress.

To approach a child or adolescent reductionistically, or to view his or her problems as entirely biological in nature, can be very harmful practices. Even when they are not harmful, the result is to see one small part of a child's dilemma and struggle, and this is surely not satisfying to professionals who care about children.

Educators are in a unique position to observe which practitioners take a comprehensive approach to patients and which do not. Their recommendations can be extremely helpful.

Lloyd A. Wells

EATING DISORDERS IN ADOLESCENTS

In the last thirty years, eating disorders have emerged as a considerable risk to the psychological and physical health of adolescents (Lewinsohn, Striegel-Moore,

and Seeley 2000). Social and public health costs of these disorders include adverse physical consequences (Pike and Striegel-Moore 1997), emotional disturbances such as depression and anxiety (Lewinsohn et al. 2000; Rowe, Pickles, Simonoff, Bulik, and Silberg 2002), social isolation (Striegel-Moore, Seeley, and Lewinsohn 2002), relationship and family problems (Humphrey 1986; Strober, and Humphrey 1987), and difficulties in social and emotional development (Fisher et al. 1995; Striegel-Moore et al. 2003). Frequently, eating disorders develop into chronic illnesses with many patients undergoing multiple hospitalizations and long-term treatment (Kreipe and Uphoff 1992; Steiner and Lock 1998). In light of these serious consequences, it is important for educators to be able to identify students at risk for eating disorders and guide these students and their families towards appropriate treatments.

To assist teachers in this process, this entry will focus on the identification and treatment of eating disorders. After describing the signs and symptoms of eating disorders, it will address gender, developmental, and family influences that place girls at risk for an eating disorder. Moreover, the standard of care for the treatment and prevention of these disorders will be described. Specifically, this entry will explain how teachers can support their students who present with these difficulties and how they can best address these issues in prevention efforts with their students.

EATING DISORDERS: SIGNS AND SYMPTOMS

Eating disorders encompass a wide range of clinical phenomena that are classified in the American Psychiatric Association's (1994) Diagnostic and Statistical Manual—Fourth Edition (DSM-IV) into two discrete disorders, Anorexia Nervosa (AN) and Bulimia Nervosa (BN). Anorexia Nervosa is derived from *anorexia*, the Greek term for loss of appetite. However, this term is somewhat of a misnomer given that individuals with anorexia do not lack a desire to eat, but rather harbor a fear of weight gain. Nevertheless, this term does seem to be descriptive of the intense weight restriction efforts of these patients, which lead them to lose weight far beyond what is acceptable. As such, one of the chief diagnostic criteria of this disorder is the refusal to maintain weight

at a minimally acceptable level or, for younger children, a failure to achieve expected weight gain. Moreover, a second criterion involves an intense fear of becoming fat. Individuals with this disorder are so preoccupied with losing weight that they often fail to see that they have gone far beyond the culturally accepted standard of thinness toward a serious state of semi-starvation. In fact, disturbance in the way in which one's body weight is perceived or the inability to perceive the seriousness of one's low body weight represents a third criterion of the disorder. Clearly, the physiological consequences of starvation can be serious and involve the disruption of puberty or regression toward a prepubertal state. This is reflected in the fourth diagnostic criterion, amenorrhea, or the loss of one's menstrual cycle. Although approximately 0.5 percent of women and girls meet the diagnostic criteria for AN, the rate may be higher for adolescent girls (Striegel-Moore and Marcus 1995). Unfortunately, given that few individuals with anorexia recognize the seriousness of their low body weight, treatment efforts with these patients tend to be exceedingly difficult.

Bulimia Nervosa is derived from the Greek term for *ox hunger* to describe the frequent episodes of binge eating in which these individuals engage. In spite of this description of overeating, the diagnostic criteria for BN shares many features with AN. In particular, similar to patients with AN, diagnostic criteria for BN involve placing an undue emphasis on weight and shape in one's self-evaluation. Individuals with BN also resemble those with anorexia in their fear of gaining weight, the level of dissatisfaction they experience with their bodies, and attempts at restrictive eating. However, for individuals with BN, periods of fasting are frequently punctuated by episodes of binge eating. According to the DSM-IV, binge eating is an episode in which a person eats more food than others would consume under similar circumstances. Individuals with Bulimia Nervosa can often consume thousands of calories in one sitting (Rosen, Leitenburg, Fisher, and Khazam 1986). However, what distinguishes a binge episode from other periods of large food consumption—such as the social eating common to high school and college students—is the feeling of a loss of control over eating. Given the value that these individuals place on thinness, to compensate for binge eating they often resort to extreme and inappropriate weight loss

measures. These compensatory behaviors represent another diagnostic criteria of the disorder and range from vomiting and abusing laxatives to intense fasting and excessive exercise. BN is more common than AN, afflicting about 1 percent of girls and women (APA 1994), and almost certainly more adolescents (Striegel-Moore and Marcus 1995).

Subthreshold eating disorders fall into the category of *eating disorder not otherwise specified* (EDNOS). Individuals with EDNOS are missing one or more of the diagnostic criteria for an eating disorder. For example, an adolescent presenting with all of the features of bulimia, yet who binge eats infrequently, would fall into this category. Another example of a patient who would fall in this category is a girl who engages in intense weight restriction to avoid gaining weight, has lost her menstrual cycle, yet does not fall below 85 percent of her expected body weight. Clearly, EDNOS includes a diverse group of patients who, because of less stringent diagnostic criteria, represent the majority of patients presenting to clinical settings (Shisslak, Crago, and Estes 1995).

GENDER, CULTURE, AND DIETING

Although the causes of eating disorders are unknown, most researchers suggest that the development of eating disorders involves a complex interplay of developmental, biological, social, and psychological factors. One of the most striking features of eating disorders is that they occur almost exclusively in girls and young women, with males representing less than 10 percent of the patients presenting in clinical settings (APA 1994). Given the disproportionate prevalence of these disorders among girls and young women, researchers have looked to gender specific influences in the development of these disorders. In particular, girls and women in Western culture are exposed to messages from peers, family, and the media about the slender ideal body and experience a great deal of pressure to conform to the culturally prescribed thin ideal (Striegel-Moore et al. 1986). Consequently, sociocultural factors have received considerable attention in the study of both body dissatisfaction and eating disorders.

As a result of these pressures to be thin, body dissatisfaction and dieting are extremely pervasive among adolescent girls. To explain the widespread nature of this problem, some theorists have referred

to body dissatisfaction among adolescent girls as a “normative discontent” (Striegel-Moore et al. 1986). In fact, nearly 25 percent of nine- to fourteen-year-old girls think they are overweight, with nearly as many on a diet at any one time (Field et al. 1999). Moreover, research suggests that many adolescent girls engage in extreme and unhealthy dieting behaviors (Killen et al. 1996). In addition to dieting, 13 percent of girls engage in purging behavior to control their weight (Killen et al. 1996).

Despite the fact that preoccupation with weight and dieting are pervasive among adolescent girls, they are not a benign rite of passage. Research suggests that dieting is strongly linked to the development of both anorexia and bulimia nervosa. Although the precise relationship between dieting and the onset of eating disorders remains to be determined, dieting can have a variety of physical, cognitive, and emotional consequences that serve to perpetuate restriction and, in many cases, trigger binge eating (for a review see Heatherton and Polivy 1992; Polivy and Herman 1993).

DEVELOPMENT

Although eating disorders occur in adulthood and in rare cases childhood, they most commonly begin during adolescence (APA 1994). In fact, eating disorders most often have their onset at two points in adolescent development—early and late—periods that represent unique developmental junctures in the lives of adolescent girls (Smolak and Levine 1996). Given that eating disorders are tied more than any other psychological disorder to specific developmental periods, researchers have looked to adolescence to understand the unique factors that contribute to the development of these disorders (Smolak and Striegel-Moore 1996).

Developmental research has established that adolescence seems to be a time when girls are particularly vulnerable (Halmi, Casper, Eckert, Goldberg, and Davis 1979). During the transition to adolescence, girls experience an increased risk for depression (Nolen-Hoeksema 1994), decreased self-esteem (Byrne 2000), and increased body dissatisfaction (Thompson, Heinberg, Altabe, and Tantleff-Dunn 1999). Several theorists have suggested that adolescence includes age-specific demands that present unique challenges for girls (Hsu 1990; Smolak and

Levine 1996; Smolak and Striegel-Moore 1996). In early adolescence, girls are accommodating pubertal changes, as well as the transition to junior high school, often simultaneously. In late adolescence, girls are preparing to go to college or leave home. These challenges require girls to develop autonomy from parents and increasingly get their emotional and social needs met from peers. Most girls navigate these challenges successfully. However, some girls are unprepared to meet these challenges, placing them at risk for eating disorders.

FAMILY FACTORS

Several researchers have examined family functioning to understand the development of eating disorders. A number of studies have found that girls and women with eating disorders, compared to those in control groups, perceive less family cohesion, including less emotional support, empathy, and understanding (Calam, Waller, Slade, and Newton 1990). In addition, compared to women in control groups, those with BN perceive higher levels of conflict and hostility (Humphrey 1986; Johnson and Flach 1985). Parents of women with eating disorders also report more family conflict than parents of those without an eating disorder (Stern et al. 1989). This has been supported by observational studies of women with BN and their families (Humphrey 1989). In addition, several theorists have suggested families of patients with AN display less tolerance and support for autonomy (Bruch 1973; Minuchin, Rosman, and Baker 1978). Observational research finds support for this suggestion, finding parents of girls with AN, tending to ignore their daughter’s self-expression (Humphrey 1989). Despite these findings, it is unclear whether such disruptions in family communication and support were present prior to the development of the disorder or reflect difficulties coping with a child who has a serious chronic illness.

In addition to family communication patterns and support, evidence suggests that girls and women who have a relative with anorexia nervosa are more likely to develop an eating disorder, compared to females without a relative with an eating disorder (Strober, Lampert, Morrell, Burroughs, and Jacobs 1990). In addition, maternal attitudes about weight have been found to be associated with disordered eating in adolescent girls (Pike and Rodin 1991). These findings

not only suggest a biological predisposition, but also the influence of being raised in an environment that stresses the value of being thin and one that provides modeling for dieting behaviors.

TREATMENT

Few controlled treatment studies of children and adolescents with eating disorders have been conducted. For the treatment of AN, the research literature is relatively modest, offering few clear treatment directions. Nevertheless, practice guidelines for the treatment of AN generally recommend a multidisciplinary approach (American Psychiatric Association 2000b). This recommendation is due to the multifaceted origins of anorexia, as well as the very serious consequences of this disorder. Within this context, patients are typically treated by a number of professionals (e.g., individual therapist, group therapist, family therapist, psychiatrist, dietitian), who function more or less independently, and who direct their interventions toward the individual patient. For the treatment of BN, research with adults generally recommends cognitive behavior therapy (CBT) (for a review see Fairburn, Agras, and Wilson 1992). The goal of CBT is to decrease the patient's reliance on restrictive eating patterns and modify the extreme personal value they attach to an idealized body shape (Fairburn, Marcus, and Wilson 1993).

Despite the standard of care for adults with anorexia and bulimia, it is unclear whether these models can be successfully applied to the treatment of adolescents. Because few adolescent patients present for treatment on their own accord and many harbor denial about the seriousness of the problem, it is unclear whether working with the adolescent directly is beneficial. In addition, many adolescents do not have the cognitive and abstract thinking skills necessary to participate actively in therapy and to take perspective on their own thinking. Furthermore, there is little research on whether seeing a number of professionals simultaneously is necessary or even effective.

It is possible that the direct involvement of several practitioners may impede the recovery of these girls (Sim, Sadowski, Whiteside, and Wells 2004). First, the attendance of these girls at several appointments per week may interfere with normal adolescent development, reducing the time or availability to develop age-appropriate social relationships. In

addition, the involvement of several practitioners may decentralize therapeutic guidance, which can have the unintended consequence of the patient receiving contradictory advice. Disparate advice is not only frustrating to the patient and her parents, but can also be problematic when working with patients who may seize upon these inconsistencies to continue restricting eating and weight loss. Lastly, the focus of these treatments tends to be on the individual patient and treatment effectiveness is founded on the patient's motivation for change. Unfortunately, focusing on personal commitment of the patient as a requisite for success can suggest that the patient is then responsible for treatment failure. Besides being inconsistent with the widely accepted disease model of the disorder, such a presumption can have the untoward effect of influencing care providers and families to effectively give up on these patients.

As an alternative to the multidisciplinary method for the treatment of anorexia nervosa, a family-based approach has gained currency in recent years (Dare, Eisler, Russell, and Szmukler 1990; Eisler, Dare, Hodges, Russell, Dodge, and le Grange 2000; Eisler, Dare, Russell, Szmukler, le Grange, and Dodge 1997; Robin et al. 1999). This alternative approach entails a specific form of family therapy in which the family is enlisted as a resource in the treatment of the patient, and is described in a recently published treatment manual (Lock, le Grange, Agras, and Dare 2001). In this therapy, the adolescent with AN is viewed as no longer capable of making sound choices regarding her health, and thus requires help from parents to overcome the illness. Therapy involves: (1) mobilizing the family in the re-feeding of the adolescent, (2) negotiating a new pattern of family relationships, and (3) helping the family to support and nurture their daughter's adolescent development, particularly regarding autonomy. In general, this treatment has demonstrated good outcomes for adolescents with anorexia nervosa (Dare et al. 1990; Eisler et al. 2000; Eisler et al. 1997).

As many of the treatment components of this intervention seem to be relevant for adolescents with bulimia, Lock (2002) has suggested that the family can play an important role in CBT. In particular, the parents can alter the environment in the service of behavioral change. In addition, families can support and assist their child who may not have the cognitive abilities, motivation, or emotion management

skills to participate actively in treatment (Lock 2002). In preliminary research, this treatment has shown promising results comparable to those expected for CBT with adults (Lock 2002).

In addition to identifying students who present with these disorders, educators can guide families to approaches that involve the family in treatment. In addition, educators can assist students by providing support and acceptance, helping them to feel comfortable in seeking help and sharing their feelings. Moreover, they can keep parents apprised of their daughter's eating behavior. To keep adolescents in school during their treatment, teachers can assist parents with meal monitoring. For example, to prevent girls in treatment from restricting in school, some families have asked a guidance counselor, school nurse, or teacher to supervise their daughter during lunchtime. This typically involves the parents sending an approved lunch to school with a list of the contents enclosed in the lunch bag. The lunch supervisor can assist the family by unpacking the student's lunch, verifying the items enclosed, and monitoring the adolescent's meal in a room free from receptacles or places where food can be hidden. Other ways that school personnel can be helpful is in staying apprised of programming limitations for girls with eating disorders such as any restrictions they may have in physical education or team sports participation.

Prevention of eating disorders in the classroom can be challenging as research has shown that prevention education programs that focus on the signs and symptoms of eating disorders can have the unintended effect of drawing ones attention to them, providing "how to" information for losing weight, and potentially glamorizing eating disorders (Mann et al. 1997). As such, educators should refrain from providing education that focuses specifically on eating disorders education. Instead, they can strive to create an environment where all students are treated equally, regardless of size, and teach respect for a diversity of body sizes and shapes. In addition, teachers should educate children about the ineffectiveness of dieting, as well as teach them to be critical consumers of media so that they can resist harmful messages. This prevention education can and should be delivered to all age groups and modified for the developmental level of the classroom.

Leslie A. Sim

MOOD DISORDERS

The American Psychiatric Association's *Diagnostic and Statistical Manual* (DSM-IV-TR) (APA 2000) splits mood disorders into different groups: Depressive Disorders, Bipolar Disorders, and then mood disorders due to general medical condition or as the effect of substance use. The depressive disorders are further divided into major depressive disorders (sometimes referred to as "clinical depression"); dysthymic disorder, which is essentially a chronically depressed mood that lasts for at least two years; and then those disorders that are "Not Otherwise Specified." Bipolar disorders are better known as forms of manic depression, and some clinicians still prefer that older label. These are divided into Bipolar I, Bipolar II, Cyclothymic Disorder, and again, those that are "Not Otherwise Specified." Bipolar I is essentially characterized by the occurrence of one or more manic episodes or what are known as "mixed episodes," a combination of both a manic episode and a major depressive episode. Bipolar II, by contrast, only requires a major depressive episode accompanied by a "hypomanic episode." A hypomanic episode is defined as "a distinct period during which there is an abnormally and persistently elevated, expansive, or irritable mood that lasts at least 4 days" (APA 2000, 365). During this period, the individual will show a number of other symptoms such as inflated self-esteem, grandiosity, decreased need for sleep, pressure of speech, flight of ideas, distractibility, or risky but pleasurable activities. Cyclothymia is characterized by "chronic, fluctuating mood disturbance involving numerous periods of hypomanic symptoms . . . and numerous periods of depressive symptoms" (APA 2000, 398). The DSM is the best source for the precise listings of the diagnostic criteria for these different disorders (APA 2000).

The DSM does not, broadly speaking, specify different sets of symptoms for children, adolescents, and adults in diagnosing mood disorders, although many clinicians have argued that these illnesses do present rather differently depending on a sufferer's age. What is clear is that mood disorders are a serious problem among children and adolescents and that they are being increasingly recognized and treated. In the United States, there is evidence that there is still significant underdiagnosis of depres-

sion. Among those whose problem has been identified, a significant proportion lack full health insurance or their managed care policies provide only minimal mental health coverage, which means that the problem is often not properly addressed. Some observers have expressed concern about the increasing use of antidepressant medication in young people—because of lack of evidence that antidepressants are an effective treatment in children, worry about the drugs' possible short- and long-term side effects, or because of a belief that using pills leaves the underlying psychological or social causes of the mood disorder unaddressed.

CRITERIA

While modern psychiatry has not achieved consensus about the causes of mental illness, it has achieved wide agreement about how to classify the major mental disorders using associated signs and symptoms. The lists of indicators provided in the DSM (APA 2000) provide the most authoritative ways of deciding whether someone has a mental disorder.

Major Depression

The essential features of major depression are similar at all ages, but there are nevertheless important variations. Clinicians generally distinguish between preadolescent or child depression on the one hand, and adolescent depression on the other.

The main criteria for a major depressive episode in children and adolescents are:

- depressed or irritable mood for most of the day, nearly every day
- markedly diminished interest in pleasure in all, or almost all, activities most of the day, nearly every day
- weight gain or significant weight loss or failure to make expected weight gain when not dieting
- insomnia or hypersomnia nearly every day
- fatigue or loss of energy nearly every day
- feelings of worthlessness or excessive or inappropriate guilt nearly every day
- diminished ability to think or concentrate, or indecisiveness, nearly every day
- recurrent thoughts of death or suicide (Adapted from APA 2000)

Preadolescent Children Diagnosing mood disorders in preadolescent children is a challenge for a number of reasons. Since young children often find it difficult to explain their emotions, mood disorders can be expressed as bodily symptoms or vague complaints about feeling unwell. There have been reports of depression in infants and preschool children, primarily characterized by a depressed look, crying, slow reactions and movements, and sleep and appetite disturbances. However, such diagnoses are somewhat controversial.

Adolescents Unsurprisingly, the symptom profile of depression in adolescents is closer to that in adults. Adolescent depression tends to be characterized by more irritable mood than depressed mood compared to adult depression.

Mania

The following are the main criteria for a manic episode for any individual, child, or adult, as given in the American Psychiatric Association's Diagnostic Manual:

1. A distinct period of abnormally and persistently elevated, expansive, or irritable mood, lasting at least 1 week (or any duration if hospitalization is necessary).
2. During the period of mood disturbance, three (or more) of the following symptoms have persisted (four if the mood is only irritable):
 - inflated self-esteem or grandiosity
 - decreased need for sleep
 - more talkative than usual or pressure to keep talking
 - flight of ideas or subjective experience that thoughts are racing or distractibility
 - increase in goal-directed activity or psychomotor agitation
 - excessive involvement in pleasurable activities that have a high potential for painful consequences
3. The mood disturbance is severe enough to cause marked impairment in occupational functioning or in usual social activities or relationships with others, or to necessitate hospitalization to prevent harm to self or oth-

ers, or there are psychotic features. (Adapted from APA, 2000, p. 362).

However, there can be great difficulty in assessing what counts as mania in children. Behavior that would be symptomatic of mania in adults may be within the normal range for young children, and it can be challenging to distinguish mania from other mental disorders. Children also tend to have a different symptom profile from adults; they tend to experience irritability rather than euphoria, with what are evocatively called “affective storms” and prolonged and aggressive temper outbursts, worsening of disruptive behavior, moodiness, difficulty sleeping at night, impulsivity, hyperactivity, inability to concentrate, explosive anger followed by guilt, depression, and poor school performance (E. B. Weller et al. 2004a, 415). Some preschool-age children have been diagnosed with mania when displaying explosive and unmanageable temper tantrums, sexual joking, and nightmares with violent imagery, but again, diagnosis at such a young age is controversial.

PROGNOSES

The wide agreement on the classification of mental disorders has helped researchers to collect information about the typical courses of those disorders. It is now possible to assess the likelihood of different outcomes once someone has received a particular diagnosis.

Pre-Pubertal Depression

The prospects for recovery from first-episode depression are good, but the younger a child is at the age of onset, the more serious the problem and the longer the depressive episode. Factors such as gender and class seem to make little difference to recovery. One study found that the average time for recovery in children aged eight to fourteen with major depressive disorder was within one year for 74 percent, but 33 percent had a recurrence within two years, and 72 percent had a recurrence within five years. (E. B. Weller et al. 2004a, 414).

Adolescent Depression

Adolescents with major depression have a much higher risk (two to four times) of going on to de-

velop depression when they become young adults. Adolescent depression occurs more often in individuals who also have conduct, anxiety, and substance abuse disorders.

Bipolar Disorder

The prognosis for children with bipolar disorder is somewhat bleak. The condition tends to be chronic and continuous, often characterized by rapid cycling with mixed manic states. Children with this condition tend to have fewer episodes of remission than adults (E. B. Weller et al. 2004a, 416). As they grow into adults, they are likely to experience further mood disorders.

PREVALENCE

Until the 1970s, it was thought that children and adolescents were not prone to disorders of mood (Harrington 2002, 463). It is still thought that childhood mood disorders are underdiagnosed (E. B. Weller et al. 2004a, 411). No large studies have been performed to discover the prevalence of depressive disorders in pre-pubertal children, although some have estimated that 0.3 percent of preschoolers and 1–2 percent of elementary school-age children are affected.

The rates of major depression in adolescents are higher, and are estimated to be between 2 percent and 5 percent at any particular time. One estimate is that each year, 1.3 percent of young people between fifteen and nineteen suffer from depression each year, and the lifetime prevalence rate of major depressive disorder ranges from 15 percent to 20 percent. Many surveys show that adolescent females experience depression considerably more often than males (E. B. Weller et al. 2004b, 448). Furthermore, a large proportion of adolescents suffer from “sub-clinical depression,” in which they exhibit several symptoms of depression, but not enough to qualify for a diagnosis. Those individuals are at high risk for developing major depression (E. B. Weller et al. 2004b, 439). There is some indication that the prevalence of depressive disorders is increasing among adolescents with each passing decade, although there is debate as to how rapid the increase is (Harrington 2002, 466).

There is less information available on the prevalence

of bipolar disorder in adolescents, but it is far less common than major depression. One estimate suggests that the lifetime prevalence for high school students is about 1 percent (E. B. Weller et al. 2004b, 449).

TREATMENTS

There has been an astonishing increase in the use of antidepressant medication with children in recent years. For example, in the United States from 1996 to 1997 the number of children age five and younger taking selective serotonin reuptake inhibitor (SSRI) medications, such as Prozac, went from 8,000 to 40,000. In that time period, children from six to eighteen years old received 792,000 prescriptions for such medications (E. B. Weller et al. 2004a, 411). Despite this, there has been relatively little study of the effectiveness of psychiatric medications in treating mood disorders in children and adolescents. As Elizabeth Weller et al. (2004, 425) comment, "It should be remembered that fewer than 300 children and adolescents have been studied in well-designed double-blind, placebo controlled studies of antidepressants, whereas thousands of adults have been treated in such controlled studies." Nevertheless, there is some evidence that antidepressants can be helpful in treating depression in young people. On the other hand, there is also serious concern that some of these medications may increase the likelihood of self-destructive behavior and suicide and, in 2003, the British government withdrew authorization for most such medications for children and adolescents. In the UK, in 2003, the Government's Medicines and Healthcare Products Regulatory Agency advised, concerning most of the new antidepressants, that "the balance of risks and benefits for the treatment of major depressive disorder in under-18s is judged to be unfavourable." (Medicines and Healthcare Products Regulatory Agency 2003). In March 2004, the FDA recommended the strengthening of the warnings section with regard to antidepressant medications used for both adults and young patients (U.S. FDA 2004).

There has been more study of the efficacy of lithium carbonate, a mood stabilizer, in adolescents than in pre-pubertal children, but it has nevertheless been used in the treatment of children of all ages. A few studies have noted that it can cause cognitive impairment in some children. For those who do take lithium, studies have suggested that long-term main-

tenance on the medication is more effective than short-term use. (E. B. Weller 2004a, 425) There have been some studies of anticonvulsant drugs (carbamazepine, valproate) used as mood stabilizers for children and adolescents with bipolar disorder, with some indications of success, but none of them was a controlled study and so they are of limited scientific value. These medications can have significant side effects.

Some forms of psychotherapy have been found effective by clinicians for treating children and adolescents. Firm scientific evidence for its efficacy is difficult to find, partly because it is hard to provide a good control group, but there have been studies showing that children who received psychotherapy fared better than those who did not. It is important to be clear that it is possible for psychotherapy to also have negative effects, and clinicians tend to recommend forms of therapy in which the therapist is passive and waits for the child to express thoughts and feelings. There still needs to be more research on what kinds of psychotherapy are most effective for particular problems in particular populations. For mood disorders, experts recommend psychoeducation, school intervention, and family treatment (E. B. Weller et al. 1995).

Christian Perring

SCHIZOPHRENIA AND THOUGHT DISORDERS

While schizophrenia is often understood among the general public to be one of the most serious mental illnesses, with symptoms thought to be allied to the popular images of "madness," there are many popular misconceptions about the nature of the disease. It should not be confused with what is often known as "multiple personality disorder" or other disorders of dissociation. As with most other mental disorders, it can be difficult to provide definitive diagnoses, and schizophrenia can be confused with bipolar disorder or pervasive developmental disorders. Furthermore, while schizophrenia is certainly a very serious and often chronically disabling disease, it is a mistake to assume that any young per-

son diagnosed with the condition will be incapable of having a rewarding life.

For a considerable part of the twentieth century, it was often assumed that schizophrenia was related to the behavior of the affected individual's family, and parents felt a great deal of guilt and shame as a result of this. Modern psychiatry has changed considerably since then, and schizophrenia is mostly described as a disease of the brain. There have been many studies showing that genetic factors make individuals predisposed to developing the disorder, but while there has been considerable speculation and study as to why one person will develop the condition while another will not, no simple causes have so far been identified. Considering the wide variation of symptoms displayed by people with different types of schizophrenia, some theorists have argued that the condition will ultimately come to be seen as a cluster of different but related disorders.

From the 1930s up until the early 1970s, the general concept of "childhood schizophrenia" was a broad one, including not only what we now call schizophrenia and allied disorders, but also autism and other developmental disorders. It was only in the 1970s that schizophrenia in childhood was conceptualized in its current form, as continuous with the adult illness. The Diagnostic Manual DSM-IV-TR (APA 2000) draws no distinction between childhood, adolescent, and adult expressions of the illness. Nevertheless, there are some differences between the characteristic forms of the disorder depending on age.

CRITERIA

There is a great deal of variation in symptoms among those diagnosed with schizophrenia. Characteristics such as hallucinations, delusions, thought disorder, and disorganized behavior are known as the "positive symptoms," while lack of emotion, lack of communication, and lack of action are called the "negative symptoms." The positive symptoms tend to predominate during the most acute phases of the illness, while negative symptoms tend to appear at other points. It is not unusual for people with schizophrenia to have been diagnosed with other serious mental disorders such as bipolar disorder or personality disorder, either because their symptoms did not cleanly fit with one mental illness or because they had more than

one disorder concurrently. The essential DSM-IV-TR criteria for schizophrenia are:

1. Characteristic symptoms include two or more of the following, each present for a significant portion of time during a one-month period (or less if successfully treated):
 - delusions
 - hallucinations
 - disorganized speech
 - grossly disorganized or catatonic behavior
 - negative symptoms, i.e., emotional flatness, lack of speech or lack of action

Note: only one of these symptoms is required if delusions are bizarre or hallucinations consist of a voice keeping up a running commentary on the person's behavior or thoughts, or two or more voices talking with each other.

2. For a significant portion of the time since the onset of the disturbance, one or more major areas of functioning such as work, relationships with others, or self-care are significantly below the level prior to the onset (or when the onset is in childhood or adolescence, failure to achieve expected levels of interpersonal, academic, or occupational achievement).
3. The signs of the disturbance are exhibited continuously for at least 6 months.
4. Some other psychotic disturbances have been ruled out as diagnoses. (Adapted from APA 2000, 312.)

Determining what counts as a symptom is not always a simple matter. As with other mental disorders, behavior and mental phenomena that might be symptomatic in adults can be normal in children. Standards for what counts as a delusion will be different in an adult and a preadolescent child, and similarly, standards of disorganization of speech and behavior will also depend on age. Furthermore, hallucinations are not necessarily symptoms of schizophrenia, but can instead be associated with sleep disturbances or even normal parts of childhood development such as imaginary friends. Sometimes unusual beliefs may have a cultural basis, resulting from a family's religion, and this should not be mistaken for schizophrenia.

Child and adolescent onset cases of schizophrenia are less often characterized by paranoia than in adults, but more often exhibit the negative symptoms, disorganized behavior and hallucinations (Hollis 2002, 616). Large proportions of children and adolescents with schizophrenia experience visual or auditory hallucinations. Studies suggest that children with schizophrenia do show more illogical thinking and loose associations than psychiatrically healthy children, but that there is no significant difference in the richness of the content of speech. The IQs of children with a diagnosis of schizophrenia tend to be lower than the mean (Tsai and Champine 2004, 387).

PROGNOSES

There is some debate over the long-term prognosis for those with schizophrenia. It has been characterized by some as a chronic disease from which only a minority of patients recover. One study of children with schizophrenia documented that a quarter of the subjects recovered completely, and about one half recovered to some degree (Tsai and Champine 2004, 338). On the other hand, other studies have pointed to evidence that more than half of those who suffer from the disease can recover completely (see Whitaker 2002, and also Warner 2003). Without settling this debate, it is very clear that schizophrenia is an extremely serious condition, with a high rate of morbidity. One survey showed that those with child and adolescent onset schizophrenia have a twelve-fold increase in risk of death compared with the general population of children of similar age and sex, and this is higher than for adult schizophrenia (Hollis 2002, 618).

PREVALENCE

There have been no well-confirmed studies of the rates of incidence of childhood and adolescent schizophrenia and related disorders, but the rates are lower than in adults. Among adults, the prevalence is about 1 percent of the population. The illness seems very rare among preadolescent children, although estimates vary. Some studies suggest that schizophrenia is more common among children from families of lower socioeconomic status (Tsai and Champine 2004, 381).

TREATMENTS

Very often, the main treatments for schizophrenia and psychotic disorders are medications. As with many other psychiatric medications, the “antipsychotics” used for schizophrenia have received little testing specifically on children and adolescents. However, they have been tested on adults and it is generally assumed that the effects of the medications are similar in adults and young people, although there are some significant differences.

Antipsychotic medication is broadly divided into two groups, the typicals and the atypicals. Some of the main typicals are haloperidol, chlorpromazine, and trifluoperazine, better known under their brand names Haldol, Thorazine, and Stelazine. These have been available for several decades now, and their effects are familiar. Some of the main newer atypical medications, which became widely used in the 1990s, include clozapine, risperidone, and olanzapine, better known under their brand names Clozaril, Risperdal, and Zyprexa. There is less research on these newer medications, but they have a reputation for causing fewer unpleasant side effects and for being more effective. Psychiatric opinion has not reached uniform agreement concerning which medications are most effective in a young population, and so there is considerable variation among clinicians. One estimate suggests that about 70 percent of patients benefit from antipsychotic medication, although it can take between six and eight weeks until the benefit is noticeable (Hollis 2002, 628). While most psychiatrists believe that medication is an essential form of treatment for schizophrenia and psychotic disorders, it should never be forgotten that all these medications, both old and new, have powerful side effects that are sometimes long-lasting, and even when they are helpful, it can take a good deal of trial and error until the right combination of medications is found for any patients, including children and adolescents.

Nonbiological treatments are also used, including cognitive-behavioral therapy and psycho educational interventions for patients and their families. There has been little study of the effectiveness of psychotherapy for young people with psychotic disorders, although some forms have been shown to be helpful in adult populations. While family interventions by highly trained professionals may well be helpful, one

authority cautions that it may be unproductive and expensive to use them as a routine form of treatment (Hollis 2002, 629).

Christian Perring

CONDUCT, OPPOSITIONAL DEFIANT, AND ANTISOCIAL DISORDERS

While educators often do not encounter students with major depressive disorder or schizophrenia because children with those illnesses tend to be rather reclusive and may stop attending school altogether, they are more likely to be confronted by students with conduct disorders of various forms. These disorders are essentially defined by the disruptive behavior of children and adolescents. Often they are grouped with attention deficit hyperactivity disorder (ADHD) and both involve problems with self-control. There is considerable overlap in the symptoms of the ADHD, conduct disorder (CD), and oppositional defiant disorder (ODD). However, CD and ODD are essentially characterized by patterns of behavior that are willfully antisocial. This makes the category of CD and ODD somewhat controversial, since some are inclined to count such problems as intrinsically moral rather than medical or psychiatric. Nevertheless, the psychiatric approach has become firmly entrenched in both educational settings and society in general.

CRITERIA

Conduct Disorder is essentially characterized by a persistent pattern of behavior that violates the basic rights of others or major age-appropriate societal norms for a year or more. These forms of behavior are placed in four groups: aggression to people and animals, destruction of property, deceitfulness or theft, and the serious violation of rules (APA 2000, 98–99). Oppositional Defiant Disorder, generally considered a less severe condition, is essentially characterized by a pattern of negative, hostile, and defiant behavior lasting at least six months, where the symptoms do not meet the criteria for CD. Those diagnosed with

ODD must frequently exhibit at least four of the following: losing temper, arguing with adults, actively defying adult requests or rules, deliberately annoying people, blaming others for his or her mistakes or bad behavior, touchy or easily annoyed, angry and resentful, and spiteful or vindictive (APA 2000, 102). One should note that since irritability is a central symptom of depressive disorders, which can lead to hostile interactions with adults and peers, it can be hard to distinguish ODD from major depressive disorder in children and adolescents. Indeed, it is possible for individuals to be diagnosed with both conditions. There is a similar overlap between ODD and psychotic disorders, and also between ODD and bipolar disorder (Hendren and Mullen 2004, 512).

Experts agree that when making diagnoses of these disorders, it is important to seek reports from both teachers and parents. Studies have found that children and parents largely agree when the children are displaying the symptoms of CD, but agree less on attention deficit, lack of impulse control, and opposition. School records may provide clinicians with useful information in assessing a child's level of performance, both academically and socially (Earls and Mezzacappa 2002, 427).

PREVALENCE

In one study, the prevalence among ten- to eleven-year-olds of conduct disorder was 6.2 percent in boys and 1.6 percent in girls (Earls and Mezzacappa 2002, 421–22). Some studies have found considerable variations depending on socioeconomic class and geographical location. Different estimates range from less than 1 percent to more than 10 percent of children, and CD is one of the most common disorders diagnosed in children (APA 2000, 97). Estimates of rates of ODD vary from 2 percent to 16 percent of children.

TREATMENTS

Multimodal treatments are generally recommended for children and adolescents diagnosed with CD and ODD. These can involve working with the family, improving the social skills of the child or adolescent, medication, cognitive-behavioral treatment, and addressing the related medical and psychological problems, especially substance abuse. The family, educators, and other community resources may

all be brought in to help with treatment. The legal system will also sometimes be involved. The problem of conduct disorder is often chronic, and so treatment is likely to be lengthy. Nevertheless, treatment is also able to lead to long-term improvement, especially if parents are actively involved. For preadolescent children, it is helpful to train the family and educators on how to mold the child's environment so as to reduce and prevent problematic forms of behavior, on how to respond to such behavior when it occurs, and how to teach the child the skills that will enable him or her to become more self-controlled. When it comes to adolescents, there are additional considerations, especially in regards to the peer groups of the young person. It can be difficult to force a youth to associate with different people, and thus it is more effective to instill a desire to associate with different friends who will not lead him or her into trouble. It can also be helpful to help the youth to develop skills to interact with peer groups more functionally.

Various forms of family therapy have been shown to be effective. Parental management training (PMT) has gained credibility in recent years. PMT to help parents manage their children's behavior has been shown to be successful in reducing the conduct disorders of young people (Earls and Mezzacappa 2002, 429). However, it may not be helpful in all cases, and can possibly lead to further parent-child conflict (Altepeter and Korger 1999, 131). There are other family system interventions that might be productive in cases where PMT is inappropriate.

Individual cognitive-behavioral treatment for conduct disorder will focus on problems such as impoverished communication and problem-solving skills, lack of impulse control, and anger and aggression. The focus on skills leads to an enhancement of self-control, and this in turn enables the young person to reduce his or her impulsive and disruptive behavior.

There is a lack of strong evidence that psychotropic medication is helpful in the specific treatment of conduct disorder (Hendren and Mullen 2004, 519). Nevertheless, it is not unusual for medication to be used when treating individuals with the disorder and this is partly justified because individuals with conduct disorders very often have other psychological problems such as ADHD or mood disorders that do demonstrably benefit from medication. Stimulants such as Ritalin have been found to reduce opposi-

tional behavior, impulsivity, and aggressive behavior in young people who have both ADHD and ODD/CD. Powerful antipsychotic medications such as Haldol have been used to reduce aggressive behavior, but they generally have severe and sometimes long-lasting side effects. One study has suggested that a newer atypical antipsychotic drug with fewer side effects is effective in reducing aggressive behavior. There is little indication that antidepressants are helpful as a treatment for conduct disorder. Mood stabilizers and anticonvulsants (such as lithium or halperidol) have been shown to reduce aggressive behavior in some populations of young people. Furthermore, there is some evidence the antianxiety drug Buspar may help with the aggressive symptoms of ODD and CD.

PREVENTION AND PROGNOSIS

Children who later develop symptoms of CD and ODD often display warning signs even in preschool and early elementary school, and it can be very helpful to catch the problems early. Multimodal treatment of such psychological problems is generally essential. Furthermore, long-term follow-up is also of great benefit. The outcome for children is improved when the mental disorders of parents are addressed.

One Canadian experiment examined the benefits of a community-based preventative program. Aimed at boys between ages five and fifteen, it offered a program of non-academic skills development. It led to a reduction in vandalism and police and fire calls in the local area, and the reduction in expenses of local government agencies was far greater than the cost of the program (Earls and Mezzacappa 2002, 431).

One form of prevention that has been popular is school-based intervention. One program combined the training programs of teachers and parents in developing social skills development in children between the years of six and eight. It was effective for white children, but not for African Americans. Other programs have also had mixed results with different populations, and show the counteracting effects of problematic policy decisions in schools, such as clustering aggressive children in the same classroom. Nevertheless, there is clear evidence that prevention programs can have powerful effects in reducing aggressive behavior in young people (Earls and Mezzacappa 2002, 431).

For those children who do develop conduct disorder, the long-term outcome tends to depend on the initial severity of the condition and the age of onset. Those with mild forms generally recover, but those with more severe forms have more difficulty overcoming the problems. The more aggressive forms of the disorder have a worse prognosis. According to one study, between 23 percent and 41 percent of highly antisocial children grew up to engage in antisocial behavior as adults, while between 17 percent and 28 percent did not become antisocial, and the rest did not fall into either category (Hendren and Mullen 2004, 521).

Christian Perring

ANXIETY DISORDERS

There are a variety of ways of conceiving of the scope of anxiety disorders. In its chapter on Anxiety Disorders, the American Psychiatric Association's diagnostic manual DSM-IV-TR (APA 2000a) includes panic attacks, various phobias, obsessive-compulsive disorders (OCD), posttraumatic stress disorder (PTSD), and stress disorders. Other approaches treat OCD and PTSD separately. It is somewhat arbitrary how to group these different conditions. Here, DSM-IV-TR will be followed and OCD and PTSD will be included. Furthermore, there is considerable overlap between mood disorders and anxiety disorders, especially in young people for whom irritability tends to be a marker of depression. Even for adults, the common condition often known as neurotic depression combines anxiety and unhappiness. So there is no sharp and obvious distinction between pure anxiety disorders and other related conditions. Nevertheless, the concept of anxiety is relatively easy for most people to understand, and thus the notion of an anxiety disorder has an intuitive straightforwardness that makes it a useful category.

One of the best-known phenomena concerning anxiety is a panic attack. Note that a panic attack is not itself a disorder, although it may be a symptom of a disorder. A panic attack is characterized by a person having at least four of the following symptoms that develop abruptly and reach a peak within 10 minutes: palpitations, pounding heart, or faster heart rate; sweating; trembling or shaking; feelings

of shortness of breath or smothering; sensations of choking; chest pain or discomfort; nausea or abdominal discomfort; feeling dizzy, unsteady, lightheaded or faint; feelings of unreality, of detachment from self; fear of losing control or going crazy; fear of dying; numbness or tingling sensations, or chills or hot flushes (APA 2000, 432). Panic attacks may occur as a result of stress or a particular event, or they can occur spontaneously. Panic disorder is essentially the condition of recurrent, unexpected panic attacks followed by at least a month of persistent concern about having another one, worry about the possible implications of the attacks, or significant change in behavior related to them. The condition can occur at any age, and often occurs in conjunction with separation anxiety disorder.

Another central condition related to anxiety is that of Specific Phobia. This is characterized by a marked and persistent excessive or unreasonable fear triggered by the presence or anticipation of a particular object or context. Exposure to the phobic stimulus nearly always triggers an immediate anxiety response. In children, the anxiety may be expressed by crying, tantrums, freezing, or clinging. While it is necessary in adults that the person recognizes the fear is excessive or unreasonable, this is not a requirement for children. For all sufferers, the phobic object or context is avoided or endured with intense anxiety or distress. These symptoms must significantly interfere with the rest of the person's life. For those under eighteen years, the symptoms must last at least six months (APA 2000, 449). For children, phobias are very often directed at animals and natural occurrences such as storms. Note that not all irrational fears count as phobias, especially for younger children. Furthermore, avoiding contexts such as school may not necessarily be a result of a phobia, but could be a symptom of a different kind of problem such as another anxiety disorder, depression, conduct disorder, substance abuse, or even family psychopathology (Black et al. 2004, 593).

A related disorder is Social Phobia, also known as Social Anxiety Disorder. There has been increasing public awareness of this disorder, partly due to advertising campaigns for medication used to treat the condition, and recent studies have revealed the incidence of the disorder in children and adolescents (Kashdan and Herbert 2001). The diagnostic criteria for the disorder are parallel to those for specific phobia, and are essentially characterized by a

“marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or possible scrutiny by others.” The person fears humiliation or embarrassment. In children, the criteria include the requirement that the child have “the capacity for age-appropriate social relationships with familiar people and the anxiety must occur in peer settings, not just in interactions with adults” (APA 2000, 456). Adolescents with this phobia may have great difficulty with dating, and may drop out of school. The condition has a greater risk of associated alcohol abuse and other mental health problems.

Separation Anxiety Disorder is a condition of the young and tends to occur soon before adolescence. It is essentially characterized by excessive anxiety concerning separation from the home or primary caregivers, and involves persistent and excessive worry about losing or possible harm occurring to caregivers (APA 2000, 125). It may be harder to identify the disorder in younger children since they have more difficulty in expressing their fears, and even older children may hide them. It is estimated that about 4 percent of young people experience this disorder, with equal proportions of males and females.

Generalized Anxiety Disorder, as its name suggests, is characterized by excessive and uncontrollable worry not focused on just a few objects or situations, which lasts for more than six months. For diagnosis in children, this must be associated with just one of the following: restlessness or feeling on edge; being easily tired; difficulty concentrating or mind going blank; irritability; muscle tension; and sleep disturbance (APA 2000, 476). About 9 percent of girls and 4 percent of boys experience this problem (Bernstein and Layne 2004, 560).

There has been greater awareness of Obsessive-Compulsive Disorder (OCD) on the part of the general public in recent years, partly spurred by the 1989 bestseller *The Boy Who Couldn't Stop Washing* by psychiatric researcher Judith Rapoport. When psychiatry was dominated by psychoanalytic theory and behaviorism, OCD was thought to be a result of poor parenting, and especially perfectionistic demands. However, this belief has now changed, and the disorder has come to be seen more as a biological illness. Although those with the disorder still fear the judgment of others, the new understanding has diminished the shame associated with the condition. The distinc-

tion between compulsions and obsessions is not strict, but compulsions are more associated with behavior while obsessions are more associated with thoughts. Often, compulsive behavior aims at preventing some imagined event or outcome over which the subject obsesses, including contamination, danger to self or others, lack of symmetry or moral wrongs. The most common behavior symptomatic of OCD is compulsive hand washing and other self-cleaning activities. Children with OCD often display repeating rituals such as repeating phrases, preoccupations with entrances to rooms, sitting behavior, and checking behavior. Counting, ordering, arranging, and hoarding are also common symptoms. The disorder normally creates distress in the sufferer, especially when he or she is unable to complete the symptomatic rituals or actions, or the actions come to significantly interfere with the rest of the person's life. Furthermore, in OCD the compulsions and obsessions are themselves typically ego-dystonic, meaning that the person does not see them as justified or reasonable, despite feeling that they need to be performed and experiencing great anxiety if they are not performed. (Note that this is one way to distinguish OCD from Obsessive-Compulsive Personality Disorder, in which the symptomatic obsessions and compulsions are more integrated in the sufferer's personality, which means that they are then ego-syntonic.) Patterns of symptoms generally change over time, generally starting with just a single obsession or compulsion, and then becoming more diverse. Young people with OCD are more likely to also suffer from ADHD and behavioral tic disorders (Freeman et al. 2004, 577). When young people with OCD are prevented from carrying out their rituals, they may react with powerful emotions, including anger. Due to the secrecy with which they perform their compulsions and rituals, it is likely that the disorder is only discovered once it has become quite serious and disabling.

The category of posttraumatic stress disorder (PTSD) has undergone a number of name and conceptual changes; it has also been known as battle fatigue, shell shock, and even nervous breakdown. The term PTSD was first explicitly termed to describe the condition of some soldiers who had served in the Vietnam War, and it is used to characterize the disorder that occurs as a reaction to extreme stress and trauma. It remains somewhat controversial as a diagnosis of adults, and its application to young

people is even more contested and unproven. Nevertheless, this is an area of psychiatric and psychological research, and there is a growing consensus that PTSD can be validly diagnosed in children and adolescents. The characteristic symptoms are intrusive thoughts concerning the original traumatic event, emotional numbness, and a tendency to avoid reminders of the original event, and physiological hyperarousal. There has been debate whether PTSD is best characterized as an anxiety disorder or is better understood as a form of dissociation (Yule 2002, 520). Furthermore, although the official psychiatric criteria of the DSM make very little distinction between adults and the young, there is debate whether the criteria are equally relevant when applied to young people. For example, it may be hard to be clear about what counts as “emotional numbing” in children, and young people may exhibit this in different ways from adults. Some accounts suggest that young children will engage in repetitive drawing and play around themes based on the traumatic event. Children and adolescents are likely to display separation difficulties with caregivers after a very frightening experience. They may well experience repetitive and intrusive thoughts about the event, flashbacks, sleep disturbances, fears of the dark, nightmares, irritability, pressure to talk, difficulties in concentration, and memory problems. They are especially aware of possible dangers. Many experience survivor guilt and feel a need to protect their families from their unhappiness and external dangers. Diagnostically, the fear of children may be expressed through disorganized or agitated behavior. If the symptoms last for less than four weeks but longer than two days, then a diagnosis of acute stress disorder is given instead of PTSD. PTSD has high rates of both false negative and false positive diagnosis due to the complexity of the possible symptoms and the number of associated mental disorders such as depression (Donnelly et al. 2004, 616).

PREVALENCE

It is estimated that about 2 to 3 percent of young people experience OCD at some point in their development. Fifty percent of those who experienced the disorder as adults first developed symptoms as children or adolescents (Rapoport and Swedo 2002, 571). Males tend to have earlier onset of first symp-

toms than females. It is likely that children are often secretive about their symptoms and this can lead to underestimates of prevalence.

Estimates of the prevalence of PTSD vary widely, depending on a great variety of factors. Some estimate that a large proportion of young people who experience a traumatic event will go on to develop a related disorder, while other studies offer far lower estimates for the development of PTSD. Overall, somewhere between 10 percent and 40 percent of children and adolescents in violence-ridden neighborhoods experience PTSD (Donnelly et al. 2004, 616). One study of Chicago middle and high school students showed remarkably high levels of exposure to violence, with 35 percent of students having witnessed a stabbing, 39 percent having witnessed a shooting, and 25 percent having witnessed a murder. Forty-six percent had been a victim of a highly violent crime (Donnelly et al. 2004, 617). Furthermore, news media makes people far more aware of violence going on both in local neighborhoods, nationally, and internationally. Not all children who experience violence will develop PTSD, and the risk factors are not well understood, but it does seem that a large proportion of children exposed to violence are at significant risk for the trauma and stress.

TREATMENTS

In many cases, when treating anxiety disorders, it is helpful for clinicians to seek information about a young person's behavior from a variety of sources, including the young person him or herself, the family, the school, and other therapists who are familiar with the young person. The main treatment options are medication and cognitive-behavioral therapy. Since the advent of the new generation of antidepressants such as Prozac, Zoloft, and Paxil, they have been the preferred drugs used to treat anxiety disorders. Studies have shown that these are generally efficacious and safe, at least in the short term (Bernstein and Layne 2004, 564). The popularity of this approach is especially tied to the fact that these medications tend to have fewer side effects that are better tolerated than those associated with older drugs, although it is important to note that the side effects were still not negligible. For example, stomachaches, headaches, and abdominal pain were all reported in one study of Prozac (p. 565).

Obsessive-Compulsive Disorder is addressed through a number of treatments. Cognitive-behavioral treatment (CBT) is often used, with much confidence, even though its efficacy has not been strictly proven in children and adolescents. Indeed, it is often the treatment of choice, and is thought by some to have longer lasting effects than medication. This treatment includes exposure and response prevention, cognitive therapy, and relaxation training. There is growing interest in the use of interactive computer programs for self-assessment and self-help, largely because this presents a relatively inexpensive option (Rapoport and Swedo 2002, 582). Nevertheless, drugs, especially the newer medications such as Prozac, Zoloft, and Paxil, are increasingly popular as a treatment and there have been studies pointing to their efficacy in reducing symptoms. Psychiatrists recommend initially using a medication for twelve weeks to assess whether or not it is effective (Bernstein and Layne 2004, 582). Once a patient has found a medication that is helpful, long-term use of the medication is often maintained. Sometimes medication is combined with the use of CBT. Other forms of psychotherapy and family therapy are also used to help patients deal with problems such as family arguments and lowered self-esteem caused by their mental disorder. Family education indeed can be an essential element in a treatment program. Teachers are occasionally included when the young person's disorder is significantly interfering with schoolwork.

As with many other mental disorders, there has been little specific research into the most effective treatment for PTSD in children and adolescents. Approaches that have been successfully used with adults have been adapted to use with young people. It is important to clarify the aims of treatment; it is unlikely that it will be possible to eradicate the experience of involvement in a traumatic event, so the ultimate goal is probably best seen as the return of the individual to healthy functioning with appropriate feelings about the event. The main mode of treatment is cognitive-behavioral therapy for which there is some evidence of efficacy. Other forms of psychotherapy, family-supportive work, and medication are also used. Families and, indeed, teachers may need help in facing the child's distress and in dealing with reminders of the traumatic experience. Many experts agree that the period immediately following the experience of trauma is crucial for the prevention or

reduction of PTSD. Debriefing and psychological first aid are commonly used both in crisis centers and schools. Yet there has been concern that the use of "grief counselors" and other such clinical interventions after major events of trauma are ineffective or could even worsen the psychological reaction to the event. Thus, it is clear that such interventions need to be done carefully and with follow-up to make sure that they have been as helpful as possible.

Medication is often used for those with PTSD as a way to enable the effectiveness of psychological treatment, although there has been little study of the scientific validity of this approach. Medication can decrease intrusive thoughts, avoidant behavior, sleeplessness, and the hypervigilance associated with PTSD and stress disorders. The most frequently used medications are the selective serotonin reuptake inhibitors such as Prozac, Paxil, and Zoloft. Many other medications are also used.

PROGNOSES

There has been little study of the long-term prognosis for young people with OCD, but what evidence there is suggests that while for some the problem clears up and treatment is helpful, for a large proportion of those afflicted it can remain a long-term trouble.

For young people diagnosed with PTSD, their troubles can be chronic and debilitating, and there is a great deal of individual variation in how they cope. The outcome partly relates to their previous mental health before the traumatic event, and the seriousness and number of traumas experienced.

Christian Perring

ATTENTION DEFICIT HYPERACTIVITY DISORDER

Attention Deficit Hyperactivity Disorder (ADHD) is the most common referral of children to mental health practitioners in the United States. It is a behavioral disorder that is manifested by inattention, hyperactivity, and impulsivity. It is the most common disruptive behavioral disorder of childhood and is recognized as a devastating contributor to academic

underachievement and social rejection. The prevalence of students diagnosed with ADHD in the school-age population is estimated at 3–5 percent (American Psychiatric Association 1994).

The primary symptoms of inattention, hyperactivity, and impulsivity are exhibited at developmentally inappropriate levels and over a consistent period of time, at least six months. All children will generally show evidence of these types of behavior at some time in their development, however, the child with ADHD presents these continuously and most likely the symptoms were present early, usually before seven years of age.

With respect to inattention, a child with ADHD shows significant deficits in sustained attention and effort. The child is unable to remain on task, has difficulty paying attention or following directions, can be easily distracted, is forgetful and often loses things. Even playful activities can be short lived because of the attention factor, which can have implications for poor social interactions. Schoolwork can suffer because of lack of attention to detail or the inability to complete a task. Organization of work and personal care can become a very real problem.

Hyperactivity associated with ADHD is characterized by excessive motor activity and an inability to regulate this activity level. It is very difficult for the child with ADHD to sit still. The tendency is to be on the go and moving constantly.

Impulsivity in a child with ADHD emerges as difficulty inhibiting behavior, whether it is in school, at home, or in any environment. Children with ADHD tend to be high risk takers but are unable to delay gratification. It is difficult for them to wait their turn or to share with others. This behavior is often perceived as antagonistic or at least selfish. However, with ADHD it is believed this behavior is the result of a neurological deficit that interferes with the normal ability to inhibit impulses. This lack of inhibition often appears as a lack of patience and frustration while working on a project or playing games.

All of these symptoms change with development. Younger children are more apt to show hyperactivity whereas attention span in early childhood is limited for most children. A hyperactive youngster may appear to outgrow the hyperactivity but it may, in turn, manifest itself in puberty and/or adolescence as impulsivity.

The effects of these symptoms can be devastating

when left unchecked. Children with ADHD are at risk for peer rejection because they are in other children's faces constantly. By nature of their inability to inhibit actions they do not acquire social skills as easily or as naturally as other children do. They also are at risk for and can present co-morbid symptoms of conduct disorder. When children are not helped to deal with the inattention, impulsivity, and hyperactivity, they stand out in a group, or in a classroom. Constant negative attention not only labels them but often times causes them to use disruptive behavior to gain needed attention.

Children with ADHD tend to be very creative. Learning with a multisensory approach works well for all children but especially for the child with ADHD. Participation in the arts and physical education activities both in school and out allows for expression of special talents and gives outlets for expenditure of excessive energy.

Low-esteem can be another by-product of ADHD. Constant negative attention can lead to depression and a bruised self-concept.

It is believed that the core problem present in ADHD is a deficit in inhibiting behavior (Barkley 1998). There is a control mechanism in the brain, so to speak, that allows most children to control behaviors, to one degree or another. Children with ADHD do not have that control. The understanding of this factor is key in working with the child with ADHD. It is essential to give children with ADHD strategies to learn how to control various behaviors, a control that will not come automatically to this child as it would to another child without the deficit.

Recognition of the lack of this inhibitor gives the proper perspective to the child's sometimes uncontrollable and exasperating behavior. Most often, children with ADHD are accused of "bad" behavior when in fact the behavior is often not intentional or at least not controllable and usually not directed at anyone.

What causes ADHD? Research is unveiling more evidence of a strong biological factor that is closely associated with and perhaps causal of ADHD. Neurological studies show less activity in the frontal lobe regions of the brain, which involve behavioral inhibition, persistence of responding, resistance to distractions, and control of one's activity level. These are all factors involved in ADHD.

What does not cause ADHD? Research indicates that although poor parenting can exacerbate ADHD, it does

not cause the disorder. There are strong support systems for parents with children who have ADHD. Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD) is one such organization. Their website is www.chadd.org/index.cfm. Diet and allergies have been thought to affect ADHD. There is no conclusive evidence to date that the cause of ADHD can be attributed to either allergies or diet. Again, there is the possibility that they can exacerbate ADHD.

The assessment and diagnosis of ADHD involves a focus on the child in his or her developmental and environmental context. Because often times there is a hereditary component of ADHD, a history of the child, including family history, is essential. A medical history and evaluation are needed to rule out a physical disorder that could be a source of problem behaviors. An emotional, social, and family evaluation is necessary to rule out depression and behavior resulting from poor childrearing practices. Parent and teacher rating scales are used to assess the child's behaviors in environmental settings. Learning disabilities are common among children with ADHD. Therefore, an assessment for academic achievement and a screening of general intelligence is protocol.

The medical history and evaluation component of the multidisciplinary diagnostic process is critical. A family history scans the possibility of hereditary link to ADHD in a child. The physician's role is to search for any remediable medical causes of ADHD. Medical diagnostic testing ranges from blood analysis to MRI scans in order to exclude any medical illness disguising ADHD. Appropriate physical and neurological examinations are protocol. When medication is indicated, the physician is critical in supervising the medication interventions program.

Detecting ADHD early is important. There is no treatment that has proven to be a cure for ADHD. Some treatments provide symptomatic relief. However, no treatment has produced any enduring effects once the treatment is withdrawn. The rationale for the early identification of ADHD is the prescription of early interventions to limit the severity of the behaviors of ADHD. A multimodal treatment plan combines medication, behavior management strategies, effective instruction, and counseling for the child and the family. The goal of intervention is to create a better fit between the child with ADHD and the demands made by the social environment at home and at school.

Medication, when appropriate, is recommended

as only one part of a broader treatment plan. Rarely is it enough to treat ADHD alone. Other interventions are needed to assist children with ADHD who have behavioral, social, and learning difficulties.

The most widely used medications to treat the symptoms of ADHD are stimulant drugs, among which are methylphenidate (Ritalin), dextroamphetamine (Dexedrine), and pemoline (Cylert). These drugs have helped many children with reducing hyperactivity and improving attention, as well as with inhibiting impulsivity. If these drugs are not helpful to the child with ADHD sometimes antidepressants or antihistamines are tried. In any case, a physician works closely with patient and family to find appropriate treatment.

In cases where medication is prescribed, when improvement is noted due to the use of medication, the drug is usually applauded for causing the change. But there is an alternate view: "These changes are actually the child's own strengths and natural abilities coming out from behind a cloud. Giving credit to the medication can make the child feel incompetent. The medication only makes these changes possible. The child must supply the effort and ability. To help children feel good about themselves, parents and teachers need to praise the child, not the drug (National Institute of Mental Health 1996, 14).

Parent training and behavioral management programs are a means for parents to become effective advocates and role models for their children. Research indicates that nonsocial behaviors such as aggression, impulsivity, and noncompliance decrease through parent training (Barkley 1998).

Because teachers play a critical role in the successful school experience of the child with ADHD and with the almost certain knowledge that every teacher will someday find a child with ADHD in his or her classroom, there is a tremendous need for teacher understanding, knowledge, and training in the management of the disorder. Proper placement and management in the classroom can aid the child with ADHD in having a positive and successful school experience.

There are several publications, organizations, and support groups that help individuals, teachers, and parents to understand and live with ADHD. For a list of these resources consult The National Institute of Mental Health (NIMH) at www.nimh.nih.gov.

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ASPERGER'S SYNDROME

Asperger's syndrome is a neurological disorder named after an Austrian physician who described a number of children who were his patients during the 1940s. Subsequent research supported his findings and the disorder was added to the *International Classification of Diseases and Related Health Problems* (World Health Organization 1992) and *Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition* (American Psychiatric Association 1994). The disorder is sometimes considered a form of high-functioning autism.

The underlying deficit in Asperger's Syndrome (AS) is the inability to sustain social interaction. Children with AS lack social skills and a basic understanding of how social relationships work. They often miss body language cues, do not make eye contact, and lack a certain affect in expression and reaction. AS causes a significant impairment in social situations, work settings, and other important areas of functioning.

A common characteristic of children with AS is a preoccupation with certain patterns of behavior, an obsessive interest in certain objects, and repetitive actions, for example, hand or finger tapping and twisting. Routines can become inflexible. Change becomes very stressful for children with AS.

Interestingly, early development of language takes a normal progression, making it difficult to detect the underlying symptoms at an early age. Although armed with sufficient verbal ability to speak at home or in public, children with AS in preschool and elementary school will often be the observer, not readily engaging in conversation with peers and/or adults. They have trouble reading social situations and body language. They can often appear to be the odd person out and are subjected to teasing and bullying.

Although intellectually competent, these children have a neurological difference that makes their way of seeing and reacting to the world different. It can be difficult for a child with AS to show empathy or understand what another child may be feeling, as well as difficult to give outward evidence of his or her own feelings.

Although the behavior of a child with AS can be unusual, it is a result of a neurological uniqueness, not "bad" behavior or behavior resulting from poor parenting. Children with AS tend to respond to stress more with emotions than with logic, causing the child

to blurt out inappropriate words and exhibit a lack of self-control.

Because a child with AS has difficulty with change, sameness in routines becomes a needed element in their daily schedule. A child with AS can become compulsive about routines and schedules.

With age, children become aware of their differences and may develop a sense of isolation. Depression can also accompany these feelings. They become aware that they have difficulties making friends but still experience the normal desire to have friendships.

The cause or causes of AS are still being researched. Evidence strongly suggests that the disorder may be caused by physical factors involved in brain development. Childrearing or emotional factors are not the cause. There is the possibility of a hereditary factor. Histories of family members with similar symptoms are common.

There is no specific treatment or medication for AS. Depending on the severity of symptoms, medication can be prescribed to offset specific symptoms. What is most important for the child with AS at all stages of development is social-skills training. Children need to learn how to make eye contact, how to converse with peers, and how to judge and respect the space needed to relate with peers and others in their environment. It is recommended that these skills be learned in small groups with children with similar problems.

The child with AS presents different cognitive abilities so that school programs should be individualized. Teachers and parents need to understand the difficulties involved, such as difficulties with eye contact, the need for consistent routines, and difficulties with change. Karen Williams (1995) offers an excellent treatise on guidelines for teachers working with Asperger's Syndrome. Parents and teachers can keep current with support groups and information through Online Asperger Syndrome Information and Support (O.A.S.I.S.) at www.udel.edu/bkirby/asperger.

As with remedies in any disorder, the therapy needs to be tailored to the individual child. A child with AS prospers with less intense emotional demands and proceeds better with concrete, step-by-step behavioral techniques. AS is a lifelong disorder, however, with early intervention, individuals with AS are capable of living full lives with self-sufficiency and with gainful employment.

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WEBSITE RESOURCES

General

www.bestdoctors.com/en/default.htm
www.healthfinder.gov
www.dr-bob.org
<http://psychcentral.com>
www.mentalhealth.org
www.mayoclinic.com
www.nami.org

Education

www.schoolcounselor.org
www.ashaweb.org
www.ideapractices.org
<http://psychcentral.com>
www.mentalhealth.org
www.ed.gov/offices/OSERS/index.html
www.ffcmh.org
www.nichcy.org

Societies

www.aacap.org
www.psych.org
www.apa.org

Syndromes

www.tourettesyndromesupport.com
www.autism-society.org
www.cabf.org
www.chadd.org
www.ocdresource.com
www.udel.edu/bkirby/asperger/

Medical Centers

<http://childpsych.columbia.edu/Centers/centers>
<http://rtckids.fmhi.usf.edu/>
www.georgetown.edu/research/gucdc/cassp.html
www.aboutourkids.org/index.html

HEALTH AND PARENTING ISSUES IN CHILDHOOD AND ADOLESCENCE

For centuries, philosophers, psychologists and educators have debated the nature-nurture controversy. At the heart of the controversy lie questions about how much of the child's development is predetermined by genetic and organismic traits of the individual, and how much is malleable and shaped by the environment in which the individual lives. In relatively recent history psychologists, including Uri Bronfenbrenner (1979, 2000), Ronald Seifer and Arnold Sameroff (1987) have reframed this debate to focus on the interplay between organic and environmental influences in determining developmental outcomes. Their work has spawned a growing body of research that highlights the dynamic and ongoing nature of the interaction between characteristics of the individual and the environment. In some instances, the influence of particular characteristics varies with their timing, as illustrated in the case of maternal substance abuse during pregnancy. The effects are most deleterious to the child's development during the first trimester, and this initial early exposure may have a direct and specific impact on development. Its significance in the life of an individual, however, is realized through the response of the environment over time to the endowments, capacities, and inclinations of the particular child, as well as through the influence of the child's changing needs and behavior on the environment.

The classic work of Albert Thomas and Stella Chess demonstrated that it is not the particular characteristics of the child that determine developmental outcome, so much as the *goodness of fit* between the child's endowments and the environment. A child who is highly persistent, for example, may have difficulty in an environment that is very fluid and changes quickly. However, in an environment that provides opportunities for the child to extend an

activity over time and follow tasks through to completion, cognitive development may be enhanced by the child's persistence.

This chapter explores two key aspects of the broader nature-nurture framework: children's health and parenting. Examining these in tandem acknowledges the critical links between them in the lives of children. The child's health is a fundamental aspect of nature; it constitutes a significant part of what the individual child brings to the process of development, and defines the readiness of the organism for growth and learning. In the most basic sense, the child's health sets limits on growth and development, and defines the resources and supports that the child seeks from the environment. At the same time, the child's health has a significant influence on the expectations and care that children receive. For example, children's chronic illnesses are associated with caregiver behavior that is restrictive and anxious, in other words, overprotective. Parenting is a central component of nurture; it represents one of the primary environmental contexts in which development unfolds. Parental behavior has a direct impact on the child, and also mediates the child's access and exposure to other environmental domains. Children's access to healthcare, for example, is in many ways dependent on parental behavior.

CHILD HEALTH

Currently there is a stark contrast between the health issues confronting children in industrialized versus developing countries. Children in developing countries continue to struggle with health problems that have been largely eradicated in the industrialized world. In 2002, the Child Health Research Project of the United States Agency for International Devel-

opment reported that in developing countries, 2 million children under the age of five die each year from pneumonia; another 2.2 million from diarrheal disease; and 5 million newborns from infections. This means that 9.2 million children in developing countries are dying annually from causes that are preventable, and readily treated in industrialized countries (Children's Health Research Group 2002a). Moreover, while HIV/AIDS constitutes a serious health concern for all nations, the severity of its impact on children in the developing world profoundly exceeds circumstances in industrialized countries. In an overview of policy issues related to HIV/AIDS, Jennifer Kates and colleagues (2002) noted that by 2010, more than forty million children in the developing world will have lost one or both parents to AIDS. These children also are themselves at heightened risk for AIDS.

This chapter focuses on health and parenting issues facing children in the industrialized world. During the twentieth century, the United States and other industrialized countries made dramatic strides in provisions for the basic health needs of children. There were significant overall decreases in the rates of infant mortality and increases in the availability of preventive vaccines for serious childhood illnesses including measles, mumps, rubella, chicken pox, pneumonia, and meningitis. The potential of these advances in medical knowledge to enhance survival rates and health has increased concern with ensuring all children have access to adequate healthcare.

Access to healthcare is closely linked to child poverty and also to racial and cultural barriers. In 2003, the United States Health Resources and Services Administration reported that 64 percent of children in the United States were white, non-Hispanic; 16 percent were Hispanic; 15 percent were black, non-Hispanic; 4 percent were Asian/Pacific Islander; and 1 percent were Native American/Alaska Native. The racial and ethnic disparities in child healthcare and health outcomes, some of which will be described later in this chapter, reflect continuing problems in ensuring equal access and utilization of health services by all groups. Even when healthcare is available, gaps in understanding across cultures and languages interfere with the delivery of optimal care. Anne Fadiman provided a case study of what she described as the "collision of two cultures" in the life of a Hmong girl, Lia, born with severe epilepsy

(1997). The inability of family members and medical care providers to effectively communicate about symptoms and treatment protocols seriously undermined the care that Lia received. Fadiman emphasizes the need for "cultural brokers" who can place linguistic translations within the broader contexts of cultural traditions and practices to facilitate communication and thereby ensure better access to healthcare for diverse populations.

PARENTING

Early development is characterized by dramatic changes in social, emotional, and cognitive functioning that occur within the context of the child's caregiving environment. Parental behavior plays a key role in shaping this environment and providing the experiences through which the child constructs a sense of self and expectations about the world. Parenting does not have a simple, unequivocal influence on child outcomes; parenting provides a context for development, but does not determine it. Anne Okongwu documented the ways in which constraints on available resources lead families to focus their energy on basic survival issues, such as procurement of food and shelter, and to neglect other needs including emotional availability for parenting and monitoring of children's health status and needs. Moreover, Victor Bernstein and Sydney Hans demonstrated that disturbances in emotional availability compromise development across multiple domains, interfering with the child's achievement of regular milestones in language and cognitive development (1994). At the same time as parenting is a significant contributor to the environmental context for the child's development, there is also increasing recognition of the impact that the child has on parenting behavior. This is illustrated in the work of psychologists Gerald Patterson, Tom Dishion, and Lawrence Bank (1984) who found that coercive parental behavior emerged in response to children's chronic aggression and noncompliance.

Changing patterns of family constellations have made untangling the influence of parenting on development more complex. The stay-at-home mother who provides nurturance and supervision is an increasing rarity. In 2002, the Children's Defense Fund reported that 79 percent of mothers with school-age children were working. In 1999, 71.5 percent of single mothers were working. Overall, by 2001, 13

million preschoolers, 60 percent of all young children in the United States, were in childcare (Children's Defense Fund 2001b).

SCHOOLS AND PREVENTION

Changing structures of family and childcare have resulted in expanded roles and responsibilities for schools in the lives of children as well as their families. Parents rely increasingly on schools as caregivers for their children. In April 2001, the Children's Defense Fund found that 65 percent of mothers in the labor force had children under age six, and 78 percent had children between the ages of six and thirteen. Nearly seven million school-age children stay home alone unsupervised after school, in the afternoon hours, when incidents of juvenile crime occur most frequently. Access to after-school activities, which varies significantly by income, is an important predictor of children's involvement in smoking, early sexual activity, and other high-risk behaviors (Children's Defense Fund 2001b).

In the second half of the twentieth century, as schools assumed more responsibility for caregiving, their role in relation to children's health issues also changed significantly. For children growing up in the 1950s, health education consisted of little more than a few class lessons in the early grades about the food pyramid, and in the upper grades about human sexual maturation and reproduction. By the 1990s, the health-related topics in school curricula had grown to include strategies for handling stress and peer pressure, alcohol and substance abuse, sexual practices, contraception, pregnancy, AIDS, and violence. This expansion reflects growing awareness of the links between how children are feeling and their ability to learn. It also reflects the changing role of the school in children's lives.

Schools have assumed responsibility for education that in previous generations was provided within family contexts. This shift has occurred partly in response to an explosion of knowledge about health-related issues, and concomitant concern about disseminating that knowledge as broadly and consistently as possible. The growing racial and ethnic diversity of America's children has heightened the importance of schools as a source of universal access to information about health resources and practices.

Schools have assumed an increasingly prominent

role in educating children and families about health issues. Although there is not always a clear consensus about how much information should be provided about sensitive issues such as sexual behavior, AIDS prevention, and substance abuse, recent research indicates that the majority of American parents would prefer that schools address these issues with their children. Many of the more effective and comprehensive prevention programs currently in use, and reviewed at the end of this chapter, include work with parents to improve their communication with their children around these sensitive topics. Schools also have become enforcers of health strategies, through such policies as requiring immunizations for entry, or psychotropic medications for continued enrollment.

The present chapter examines a series of issues related to children's health and parenting. The first three entries address basic health concerns for children. While the emphasis in these entries is on the "nature" domain, the contribution of environmental factors to the emergence as well as the alleviation of childhood health problems is also considered. "Perinatal Health Issues" presents an overview of infant mortality and neonatal risk factors. It also reviews maternal behaviors during pregnancy that increase the risk of complications and developmental problems for the child. "Health Issues in Childhood and Adolescence" provides a profile of the changing health issues for American children. Despite the elimination of many of the common diseases of childhood through vaccines, other chronic conditions, including asthma and obesity, pose increasing health problems for children. Aside from health problems that are primarily physical in nature, many childhood disorders are defined in terms of disruption of the child's emotional and cognitive functioning. "Mental Health Disorders in Childhood and Adolescence" reviews these disorders, highlighting their links to physical symptoms and treatment, as well as to environmental influences.

The next four entries deal with a continuum of nurture issues. "Parenting Behavior" examines changing family constellations and childcare patterns. Key dimensions of parenting style and discipline techniques are highlighted. In "Family Stress and Coping," the impact of stress on the individual as well as on family functioning is considered. The importance of stress to the development of effective coping strat-

gies is highlighted. Strategies for helping children develop more effective coping skills are presented. Extreme cases of ineffective coping are explored in “Child Maltreatment,” which examines the antecedents and consequences of child abuse. The impact of child maltreatment on emotional regulation, peer relationships, and school achievement is considered. “Families of Children with Special Needs” explores the issues and stresses confronted by families with children who have particular physical and/or developmental needs. The family’s role in ensuring appropriate care and services for the affected child, and the impact of the child’s special needs on family functioning, are considered.

The final two entries of this chapter address issues that reflect the intimate connections between children and adolescents’ health, behavior, and education. For the child, adolescence marks an increasing engagement in peer relationships and susceptibility to peer influences. At the same time, there is experimentation with behaviors, such as smoking, drinking, and early sexual activity, that pose health risks. In fact, these behaviors pose threats to the individual’s physical and emotional well being, as well as to educational and occupational success. Changing family constellations and diminishing parental supervision, combined with parental uncertainty about how to handle these sensitive topics, have resulted in a growing reliance on schools to handle these issues. “Risky Behaviors in Adolescence” reviews current findings on adolescent involvement in smoking, drinking, substance abuse, and early sexual activity. “Adolescent Health Education and Prevention” provides an overview of research on effective strategies for preventing adolescent initiation of risky behavior.

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PERINATAL HEALTH ISSUES

The living conditions and medical care for mothers and children vary dramatically between industrialized and developing countries. The impact of these differences is highly apparent in the health issues and risks surrounding pregnancy and newborn outcomes. In 2002, the Child Health Research

Project of the United States Agency for International Development reported that approximately five million infants under the age of one month die annually, the majority of these within the first week of life. Of these deaths, 98 percent occur in developing countries. It is difficult to obtain precise information about the cause of death in many of these cases, because most of the births occur at home without medical personnel or assistance. One known cause of these early deaths is infection, which accounts for almost 40 percent of the cases (Children’s Health Research Group 2002b).

These findings contrast starkly to perinatal health issues and outcomes in the United States and other industrialized nations. Over the past several decades, general attitudes have moved from viewing pregnancy as an illness to be treated to viewing it as a medical condition that requires monitoring and support. The move away from a disease model of pregnancy has been associated with assigning a more active and less medicated role for the mother, and much more involvement of other family members in prenatal care and the processes of labor and delivery. There have also been major advances in medical procedures and technology to support the survival of infants who would not have survived in previous generations or under the conditions still prevalent in developing countries, because they were born very early, very small, and/or with serious impairments. One result of these advances, however, has been an increase in the number of newborns and infants who face difficulties that threaten both their immediate well being and their long-term chances for healthy development and learning. This entry will examine some of the key issues surrounding the health of American mothers and newborns during the time right around birth, commonly referred to as the perinatal period.

INFANT MORTALITY

Infant mortality refers to the rate of deaths among babies less than one year of age. In the United States, the Office of Minority Health of the Centers for Disease Control and Prevention (CDC 2004) reported that the infant mortality rate declined steadily from 26.0 deaths per 1,000 in 1960 to 6.9 deaths per 1,000 in 2000. The most frequently cited causes of infant death were preterm/low birth weight, Sud-

den Infant Death Syndrome (SIDS), complications of pregnancy, respiratory distress syndrome, and congenital abnormalities (CDC 2004).

The CDC reported that in 1998, the United States ranked twenty-eighth in the world in infant mortality (CDC 2004). This low ranking is due primarily to racial disparities in infant mortality. Specifically, the infant mortality rate among African Americans (14.1 deaths per 1,000 live births) was slightly more than double the national average (6.9 deaths per 1,000 live births). SIDS deaths were 2.3 times more frequent among Native American and Alaska Native infants than among non-Hispanic white infants.

PRETERM AND LOW BIRTHWEIGHT INFANTS

Babies born within two weeks of their due date (forty weeks from the mother's last menstrual cycle) are considered full term. Babies are considered "preterm" if they are born before the thirty-seventh week. The March of Dimes reported that the rate of preterm births in the United States increased more than 10 percent from 1991 to 2001. In 2001, 11.9 percent of live births in the United States were preterm. This means that in an average week, 9,159 babies were born preterm; 1,493 were born very preterm, at thirty-two weeks gestational age or younger. Recent medical advances have extended the point of viability down to twenty-three weeks, and improved the survival rates for infants born very preterm. However, in 2003 the March of Dimes reported that prematurity/low birthweight remains the leading cause of death in the first month of life. Moreover, although advances in medical treatment have reduced the mortality rates among preterm infants, these infants still face many other difficulties, including developmental delays, chronic respiratory problems, and impairments of vision and hearing.

As with infant mortality, there are significant racial and ethnic disparities in the rate of preterm births, as indicated in Table 29.1.

These racial disparities are even more striking with regard to extremely low birthweight infants (ELBW). ELBW is defined as birthweight less than 1,000 grams (2 lbs., 3 oz.), and generally involves infants born very preterm, at twenty-seven weeks or less. In 2002, Drs. Siva Subramanian, Helen Yoon, and Juan Toral reported that while African Ameri-

Table 29.1

Rates of Preterm Birth

Group	Percent
African American	17.6
Native American	12.8
Hispanic	11.4
Non-Hispanic White	10.6
Asian	10.2

Source: March of Dimes (2003).

cans accounted for 15.5 percent of live births in the United States, they accounted for 36.8 percent of the ELBW births. Although overall survival rates have improved, the proportion of ELBW infants who suffer severe impairments, including mental retardation, cerebral palsy, and deafness, has not changed. Subramanian, Yoon, and Toral reported that major impairments occur in as many as 48 percent of ELBW infants.

MATERNAL HEALTH DURING PREGNANCY

Maternal health and medical history are important predictors of the course of pregnancy and the likelihood of preterm delivery. There are a number of factors that increase the risk for preterm and low birthweight births, including the mother's history of prior preterm delivery, overall health status, and nutrition. Maternal age also is a factor, with increased risk for preterm and low birthweight births among women younger than twenty or older than thirty-five. Preterm and low birthweight births occur more frequently in multiple births. In 2003, the National Center for Infants, Toddlers and Families reported that the rate of triplet and higher order multiple births has increased 400 percent over the past twenty years. Maternal smoking, infections, and unplanned pregnancy also increase the risk of preterm/low birthweight births. The impact of these factors is heightened by the large number of women of child-bearing age who are uninsured, do not obtain regular medical care, and have low incomes.

For many of the factors that jeopardize prenatal development, exposure during the first trimester of pregnancy has particularly negative effects. Women

who do not realize that they are pregnant may engage in behaviors that compromise the development of their unborn child. Many women, especially those living in poverty and not receiving regular medical care, do not become aware that they are pregnant until the second or third trimester. In 2001, the Children's Defense Fund reported that one in six infants is born to a mother who did not receive prenatal care during the first three months of pregnancy; and one in twenty-six is born to a mother who received late or no prenatal care (Children's Defense Fund 2001a).

Prenatal care is particularly important for identifying maternal medical conditions that may pose a threat to the infant. This need is most urgent for mothers with HIV/AIDS (Acquired Immune Deficiency Syndrome). In 2001, AIDS was the sixth leading cause of death among one- to four-year-olds in the United States (Santrock 2004). Of the infants born to women infected with AIDS, between 15 and 30 percent become infected with the virus. With proper medical treatment and supervision, the rate of transmission can be reduced to 10 percent. Transmission of the virus from the mother to her baby can occur in one of three ways: (1) During pregnancy, the virus can cross the placenta; (2) During delivery, the virus can be transmitted through contact with the mother's blood or fluids; and (3) Postpartum, the virus can be transmitted through breastfeeding.

In addition to these concerns about maternal physical health, there are particular maternal behaviors that increase the likelihood of preterm/low birthweight births, as well as of complications during the newborn period and neurological and learning disorders in later development. Most notable among these behaviors are smoking, drinking, and substance abuse. The negative consequences of maternal smoking during pregnancy have been extensively documented (Burguet et al. 2004). Smoking is associated with higher rates of preterm delivery, infant mortality, and lower birthweights. Soren Ventegod and Joav Merrick recently noted the growing evidence that links exposure to tobacco to developmental delays and early behavioral problems in school (2003).

There has also been extensive documentation of the negative impact of maternal alcohol consumption during pregnancy. In 2002, the CDC published a report that described prenatal exposure to alcohol as

“one of the leading preventable causes of birth defects, mental retardation, and neurodevelopmental disorders in the United States.” Examining trends from 1991 to 1999, the CDC found that while overall, the rate of drinking during pregnancy had declined, the rates of binge drinking (five or more drinks on one occasion) and frequent drinking (seven or more drinks weekly) had not changed. This means that although fewer women now drink during pregnancy, those who do drink have continued previous patterns of heavy drinking. The data also indicated that women who drank at all during pregnancy, in comparison to those who did not, were more likely to be older than thirty, employed, and unmarried. Moreover, whereas women under age thirty tended to reduce their drinking upon learning that they were pregnant, women over age thirty did not. The CDC interprets this as indicating that the older women had greater alcohol dependency, and consequently were unable to reduce their consumption during pregnancy.

Maternal alcohol consumption during pregnancy has shown a range of negative effects on the infant and developing child. Fetal alcohol syndrome (FAS) is reported in approximately three in 10,000 births. The American Academy of Pediatrics (2000) describes the symptoms of FAS as including: small body size, low birthweight, slow development without catch-up, skeletal malformations, facial abnormalities, organ defects, and irregularities of the central nervous system, such as small brain, mental retardation, and poor coordination. In some children, FAS appears as a full-blown syndrome; in others, only a few symptoms are present (fetal alcohol effects, or FAE). While the early research documenting FAS was conducted with infants born to heavy drinkers, more recent evidence has suggested that prenatal exposure to even small amounts of alcohol can have negative effects.

Research on maternal substance abuse during pregnancy has sought to identify a syndrome of effects comparable to those associated with alcohol. Thus far, it has not been possible to identify a consistent pattern of symptoms that constitute a prenatal substance abuse syndrome. However, there is substantial evidence linking maternal substance abuse during pregnancy with negative consequences including preterm and low birthweight births; complications of labor and delivery; higher incidence of SIDS and neurological abnormalities; impaired emotional regulation; as well as delays in language and representa-

tional play. Marilyn Lewis and colleagues recently reported a dose-related effect of prenatal cocaine exposure on toddlers' mental and psychomotor development, indicating that more severe effects were associated with higher levels of maternal cocaine use (2004).

PREVENTION AND INTERVENTION

Although there have been major improvements in infant mortality rates, serious threats to maternal and infant health remain. Strikingly, many of these threats are behavioral rather than organic, which makes them natural targets for prevention and education efforts. The Special Supplemental Nutrition Program for Women, Infants, and Children addresses the nutritional needs of women, infants and children determined to be low income and nutritionally at risk. In fiscal year 2000, the WIC program served over seven million women and children (March of Dimes 2003). Maternal smoking, drinking, and substance abuse pose different problems for prevention and intervention. Over the past several decades, there have been nationwide efforts to heighten public awareness of the special risks associated with these behaviors during pregnancy. While the overall numbers of women who smoke and drink during pregnancy have declined, it appears that the behaviors continue among those women with greater dependence on these substances, making more negative effects likely. While monitoring the smoking and drinking habits of women during pregnancy can be incorporated into regular prenatal care, the abuse of illicit substances poses special challenges. Pregnant women frequently fear that disclosing their use of illicit substances will result in losing custody of their children. The move in some states to prosecute pregnant women who are using cocaine or heroin has heightened this concern and made it more difficult for doctors to get accurate prenatal information. Fear of prosecution also has exacerbated the tendency of substance abusing women to access prenatal care erratically, or not at all.

The challenge for prevention efforts is to provide information in ways that are accessible and believable to those most at risk. Since a large number of women do not learn that they are pregnant until after the first trimester, all women ages fifteen through forty-four must be included in the target

population for information about perinatal health. The broad cultural, socioeconomic, educational, age, and occupational diversity of this population requires that prevention and education efforts be implemented in multiple settings (schools, community health centers, media) and from multiple perspectives.

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HEALTH ISSUES IN CHILDHOOD AND ADOLESCENCE

Children's health has both direct and indirect consequences for children's development and learning. A child who is hungry is likely to be less attentive in class; a child with chronic ear infections is more likely to show delays in speech and language. While advances in pharmacology have yielded a new generation of antibiotics, vaccines, and other drugs for preventing and treating many childhood illnesses, serious problems remain. A growing number of American children are dealing with health issues, including asthma, poor nutrition, obesity, and AIDS, that interfere with their school attendance and participation, and place special demands on their families and teachers. After a brief overview of current trends in immunizations, which have led to a significant shift in the profile of childhood illnesses, this entry will examine two areas in which the challenges to child health are increasing most rapidly across all income and racial/ethnic groups: asthma and nutrition.

CHILDHOOD IMMUNIZATIONS

In the twentieth century, vaccine-preventable illnesses were a major cause of infant mortality. In the United States, medical and public health agencies have made significant efforts to increase access and utilization of childhood immunizations. Through the Vaccines for Children Program, which was implemented in 1994, the government purchases vaccines at a discount, and distributes them to states so that they can be allocated to physicians and health clinics that serve children who are uninsured or enrolled in Medicaid. The program's

success was apparent in the Children's Defense Fund report (2001c) that by 1999, 80 percent of two-year-olds were fully immunized against diphtheria, tetanus, pertussis, measles, mumps, rubella, and polio. In 2003, the Centers for Disease Control and Prevention indicated that the number of American children receiving immunizations remained at an all-time high (Medical Letter on the CDC and FDA August 2003). Moreover, the CDC reported significant increases in the number of children receiving the immunizations for chicken pox and pneumonia, which have become available more recently.

Despite the overall success of immunization programs, however, racial, ethnic, and regional disparities in immunization rates remain. Concern about possible side effects leads some parents to decide against immunizations for their children. Most recently, there has been public concern over possible links between childhood immunizations and autism. Although no clear evidence supporting this link has been presented to date, the concern has generated some public support for parental choice about immunizations. Psychologists Abigail Wroe, Nikki Turner, and Paul Salkovskis (2004) examined parental decisions about immunizations. They found that parents who decided against immunization were concerned about possible side effects, believed that the body's natural immune system should not be disrupted, and were more likely to distrust information about immunizations offered by the government and healthcare professionals. Elaine Larson (2003) recently emphasized the need for practitioners to employ culturally competent education and outreach approaches to improve access and utilization of immunization programs by underserved populations.

Immunization requirements for school entry have been implemented in all fifty states, resulting in vaccination rates of 95 percent for children entering school. Children exempted from vaccinations for religious or medical reasons are thirty-five times more likely to contract measles than those who have been vaccinated. These unvaccinated children pose a health risk to others in their communities who may be particularly vulnerable to these contagious but preventable diseases.

ASTHMA

Ironically, at the same time as the incidence of many contagious diseases has been reduced dramatically

through childhood immunizations, the rate of asthma has nearly doubled in the United States over the past ten years. Citing data from the CDC, the Children's Defense Fund reports that asthma has become one of the most common chronic health problems of childhood (Children's Defense Fund 2001d). Their data indicate that 4.4 million children are currently affected by asthma.

There is increasing awareness across the health professions that many illnesses have roots in both biological and psychosocial factors. Researchers Mary Klinnert, Marcella Price, Andrew Liu and JoAnn Robinson (2002) examine childhood asthma from this perspective, suggesting that asthma is the result of genetic susceptibility combined with environmental exposures. It is the environmental exposures that appear to account for the prevalent patterns of childhood asthma in the United States. This suggests prevention and intervention could have a significant impact on childhood asthma rates.

There are significant racial and economic disparities in both the rates of asthma and the consequences associated with it. Prevalence and morbidity of asthma are greatest among African American children living in low-income households in large urban communities. The Children's Defense Fund (2001d) reports that recent increases in asthma rates have been highest among children of color living in low-income communities. Among non-Hispanic children ages five to fourteen, African American children are five times more likely than white children to die from asthma. Other factors associated with higher prevalence of childhood asthma include young maternal age, single parenthood, poor prenatal care, and low birthweight in infants. Klinnert and colleagues note that all of these factors occur more frequently in low-income families, and are characteristics associated with increased family stress (Klinnert et al. 2002). Similarly, problems with parental functioning, stress, and mental health, all associated with asthma prevalence and morbidity, are also more frequent in low-income families.

There have been mixed findings regarding the risk and protective factors for childhood asthma. Recently, Jouni Jaakkola and Mika Gissler (2004) sought to clarify the relationship that has been reported between maternal smoking during pregnancy and childhood asthma. Specifically, they examined the relation between the incidence of asthma at age

seven and three perinatal variables, all of which have well-documented associations with maternal smoking during pregnancy: birthweight and small for gestational age (both measures of fetal growth), and preterm delivery. The findings of their large-scale study of Finnish children indicated that both birthweight and preterm delivery increased the risk of childhood asthma, although being small for gestational age did not. Overall, Jaakkola and Gissler conclude that fetal growth mediates only a small portion of the association between maternal smoking and childhood asthma. These findings again highlight the importance of environmental factors in predicting childhood asthma.

Klennert and colleagues sought to identify racial/ethnic differences in the “patterns of covariation of family history, environmental allergens, and psychosocial stressors” associated with childhood asthma (Klennert et al. 2002). They concluded that it was difficult to clearly delineate the effects of individual variables because the variables tend to occur in clusters. Specifically, the groups with the highest levels of exposure to maternal smoking and environmental allergens also had the greatest proportion of young single mothers and the highest incidence of stressful life experiences. Klennert and colleagues suggest that intervention strategies must acknowledge the clustering of these variables in the lives of children and their families. This means that in addition to addressing biological vulnerabilities and exposures, intervention efforts must ameliorate the psychosocial factors that contribute to these biological conditions and exposures.

Interestingly, recent studies have suggested a “hygiene hypothesis” to explain the origins of childhood asthma. According to this approach, children’s vulnerability to asthma may result from their lack of early exposure to infections. This early exposure triggers the child’s development of immunities to common infections; without the exposure, the child is more susceptible to later respiratory difficulties, and more likely to develop asthma (Lima et al. 2003). Rosangela Lima, Cesar Victora, Ana Menezes, and Fernando Barros (2003) recently corroborated this relationship in a large-scale study of Brazilian adolescents. In their findings, being of high socioeconomic status, living in an uncrowded household, and being breastfed for nine months or longer were all related to higher

risk for asthma. Lima and colleagues conclude that many of the health practices that serve to reduce the spread of serious illnesses in developing countries may inadvertently place the child at higher risk for asthma. The implications of this paradoxical finding for intervention strategies are currently being explored. At the same time, some promising school-based interventions for helping children regulate their asthma are emerging, and will be discussed in the entry on intervention at the end of this chapter.

NUTRITION, OBESITY, AND EATING DISORDERS

Nutrition

The United States is lauded as the land of plenty. Yet in 2003, the Children’s Defense Fund projected that in 2004, one out of six American households with children will have trouble “putting food on the table.” Researchers Cheryl Wehler, Linda Weinreb, Nicholas Huntington, Richard Scott, David Hosmer, Kenneth Fletcher, Robert Goldberg and Craig Gundersen (2004) cite government findings that 10.1 percent of all American households are food insecure, which means that they did not have enough money or other resources to obtain sufficient food to enable all family members to have active, healthy lives. Of these 31 million food-insecure Americans, 3 million households experience hunger.

Recent data from the third National Health and Nutrition Examination Survey illustrate the links between children’s nutrition and health. In an analysis of the data on young children, food insufficiency was defined as a family member’s report that the family sometimes or often did not have enough to eat. Not surprisingly, poor-fair health status and iron deficiency were both more prevalent among low-versus high-income children. Even after the effects of confounding variables including poverty were controlled, food insufficiency increased the likelihood that children would have poorer health status and more frequent headaches and stomachaches. In preschool children, food insufficiency also was associated with more frequent colds.

Wehler and colleagues (2004) examined socioeconomic and psychosocial factors that contribute to food insufficiency. Their findings indicate that while

lack of economic resources contributes significantly to hunger, these effects are exacerbated by maternal physical and mental health. Mothers with fewer health problems and better emotional functioning were more able to protect their children from hunger, despite constrained resources.

Obesity

At the same time as procuring sufficient food is difficult for many American children and their families, excessive food consumption has resulted in a growing problem of childhood obesity and associated health risks. Researchers Jennifer Nelson, Mary Ann Chiasson and Viola Ford (2004) found that from 1974 to 2000, the prevalence of overweight children increased from 4 percent of the population to 15 percent for children ages six through eleven, and from 5 percent to 10 percent in two- to five-year-olds. In 2003, noting that the number of obese children had doubled over the past two decades, the American Academy of Pediatrics reported that “the prevalence of childhood overweight and obesity is increasing at an alarming rate in the United States as well as in other developed and developing countries.” The pediatric evaluation of overweight and obesity status is based on body mass index (BMI), a ratio of body weight to height. Children with BMIs between the eighty-fifth and ninety-fifth percentile for their age and gender are considered at risk for overweight; those with BMIs over the ninety-fifth percentile are considered obese.

Childhood obesity is associated with serious health problems, both in childhood and adulthood. In children, these problems include increased risk of cardiovascular problems such as hypertension, endocrine problems such as type 2 diabetes and menstrual irregularities, and mental health problems such as depression and low self-esteem. Childhood obesity, as well as the symptoms associated with it, is likely to persist in adulthood. Because of the intractability of adult obesity, the American Academy of Pediatrics recommends increasing efforts to prevent childhood obesity as the best strategy for alleviating this major American health risk (AAP 2003). Studies of children’s eating and exercise patterns suggest that childhood obesity results from a combination of both. The diets of American children generally do not meet the recommended requirements for fruits, vegetables,

and calcium, and reflect excessive consumption of highly processed, salted, and sweetened foods. Working mothers increasingly rely on fast-food meals, which are particularly laden with more caloric than nutritional value. Moreover, children’s engagement in physical activity has diminished as recreational time has focused more on computers and television.

The depression and low self-esteem associated with childhood obesity have particularly deleterious effects in adolescence. Concerns about self-image and social status may lead obese adolescents to impose extreme limits on their caloric intake, which create additional health problems. There is increasing evidence of links between adolescent dieting and the initiation of health-compromising behaviors, including smoking, drinking, substance abuse, and unprotected sex.

Eating Disorders

Over the past twenty years, there has been a significant increase in cases of eating disorders. These disorders are defined in terms of: (1) maladaptive attempts to control body weight, (2) serious disruptions in eating behavior, and (3) abnormal attitudes about body shape and weight, and may occur in people who are overweight, normal weight, or underweight. Eating disorders may include binge eating, in which the individual consumes an unusually large amount of food in a limited time period, and feels a lack of control about the eating. Individuals with eating disorders seek to control their weight through either restricting intake or purging.

The two main categories of eating disorders are anorexia nervosa and bulimia nervosa. Individuals with anorexia nervosa have an intense fear of gaining weight, have bodyweights less than 85 percent of expected weight, and have distorted body images that lack recognition of the low bodyweight. Anorexics experience disruption of the menstrual cycle, and can place themselves at risk of death from the extreme restrictions on caloric intake that they impose. Anorexics do not perceive their low bodyweight as posing a health risk. In Hilda Bruch’s classic work on anorexia, some patients perceived their refusal to eat as an indicator of personal control and autonomy (1979). Whereas anorexics restrict their intake, bulimics engage in binge eating and then purging. Eating disorders generally begin in adolescence, and occur most

frequently in white females from middle- to upper-income households.

In the twentieth century, the profile of health issues facing American children changed significantly. The broad availability of immunizations and antibiotics has drastically reduced, and in some cases eliminated, contagious diseases that once posed serious threats to children's survival. At the present time, the most pervasive and rapidly growing challenges to children's health have strong environmental components that interact with genetic predispositions and vulnerabilities. The complexity of these disorders will require more comprehensive approaches to prevention and intervention.

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MENTAL HEALTH DISORDERS IN CHILDHOOD AND ADOLESCENCE

The number of children diagnosed with mental health disorders is soaring. Public debate frequently rages over the trend to diagnose and treat children and adolescents who may deviate from behavioral expectations. But are children truly over-diagnosed and medicated so that parents and teachers can manage them better? Or, are parents and clinicians more aware of normal development and behavior, enabling them to identify early symptoms of problems? The answer to these questions can only be answered on a case-by-case basis. However, all medical professionals utilize the criteria of symptoms and exclusions listed in the Diagnostic and Statistical Manual-IV (DSM-IV) to diagnose children and adolescents with a mental health disorder (American Psychiatric Association 1994). As the DSM-IV is a medical system of classification, most educators and parents are not familiar with the behaviors, symptoms, and exclusions listed as indicators of the various disorders. Moreover, adults who are well informed as to the distinction between typical behaviors and exceptional behaviors in children are in a better position to know when to seek professional help and how to participate actively in the diagnostic process.

Recent estimates indicate that 3–4 million Ameri-

can children under the age of eighteen are prescribed and take psychiatric drugs. This number has doubled since a decade ago, partially due to the fact that children at increasingly younger ages are being prescribed psychiatric drugs (Zito 2000). The problem with this trend is that most of the psychiatric drugs prescribed to children have not been tested in these young patients. Concerns about method of action, side effects, and long-term consequences of using these substances abound, yet the medications are being prescribed at ever-increasing rates. How is this possible? Drug companies tend to pursue the simplest route to market for their medications and this generally means obtaining approval by the Food and Drug Administration (FDA) for the adult use of medications. Back in 1970 the FDA declared that the medications doctors prescribed for children must be tested in children. However the FDA's limited power and influence is unable to monitor prescription practices and the organization estimates that between 70 percent and 80 percent of all drugs prescribed to children have not been approved for use by children (Brown 2003). Although the use of what is called "off-label" treatments is common medical practice, the FDA and the U.S. Department of Health and Human Services continue to push for studies on pediatric patients. Slowly, things are changing. Organizations such as the National Institute of Mental Health are leading the way by funding investigations into basic drug biology and clinical trials that look into how these drugs affect children's brains.

The etiology of mental health disorders is unclear. Experts agree that they develop out of a complex set of risk factors that include genetic predisposition, brain chemistry, personality and temperament, parent and family interactions, as well as life experiences. What is clear is that the early diagnosis and treatment of mental health problems in children is a trend that is around to stay. Professionals concur that the earlier a condition is recognized, the sooner an appropriate course of treatment can begin and the better the long-term prognosis. Treatment options include parent training, family and individual psychotherapy, behavioral therapy, and medications. Once diagnosis occurs, families and educators can utilize treatment options to begin to counter the negative effects of having a child with a mental health disorder such as family stress, lowered self-esteem,

learning difficulties, and socialization issues. Therefore, we as educated participants in society need to be armed with an awareness of the early indications of a variety of mental health disorders that are present in childhood and adolescence. Three of the most common mental health disorders will be briefly reviewed: attention deficit hyperactivity disorder, mood disorders, and anxiety disorders.

ATTENTION DEFICIT HYPERACTIVITY DISORDER

Attention deficit hyperactivity disorder (ADHD) is one contributor to the current increase in the diagnosis of mental health disorders. ADHD has become the most common neuropsychiatric syndrome diagnosed in children. ADHD is reported to affect between 3 percent and 5 percent of school-age children (American Psychiatric Association 1994), a figure that represents approximately 2 million children nationwide. Despite the growing numbers of children who are diagnosed with this disorder, ADHD continues to evade efforts to pinpoint a universally accepted definition. The DSM-IV states that the atypical behavior observed in the individual must be present for at least six months, that the child must display six or more symptoms from the inattention (Attention Deficit Disorder) or the hyperactivity/impulsivity (Attention Deficit Hyperactivity Disorder) categories prior to the age of seven, and that the behavior must be present in at least two settings (e.g., home and school). Complicating these guidelines is the fact that ADHD is a multifaceted disorder, encompassing a variety of behavioral symptoms that manifest differently in individual children. Children with ADHD include those with symptoms of difficulty sustaining attention, distractibility, lack of task persistence, and disorganization. However, it can also include children with excessive motor activity and impulsive responding behavior. Russell Barkley, one of the primary and leading researchers in the area, provided one of the most helpful definitions of ADHD in 1990 indicating that it is a "developmental disorder characterized by inappropriate degrees of inattention, over-activity, and impulsivity. These often arise in early childhood; are relatively chronic in nature; and are not readily accounted for on the basis of gross neurological,

sensory, language, motor impairment, mental retardation, or severe emotional disturbance" (p. 47). Despite the rise in research investigating this disorder over the last two decades, ADHD still remains a challenge to diagnose as there are frequently coexistent conditions complicating the diagnosis. These conditions include anxiety disorders, mood disorders, learning disorders, conduct disorder, and oppositional defiant disorder.

EDUCATION AND TREATMENT FOR ADHD

Without early intervention and treatment, ADHD-type behaviors interfere with developmentally appropriate socialization, learning, and parent-child interaction. However, parental concerns about the rising rate of stimulant prescription, potential side-effects of long-term medication, and the growing use of psychostimulant medication in preschool children make professional consultation for ADHD difficulties an option of last resort. Prior to seeking professional help, parents usually try a variety of home-cure approaches that might include behavior modification techniques, dietary restrictions (e.g., limiting sugar or preservatives), corporal punishment, activity scheduling, and religious interventions. Some home-cure techniques may be consistent with evidence-based behavioral principles; however other strategies may add undue stress to the parent-child relationship. Thus, the home-cure strategies implemented by the parents should be discussed and assessed as to their efficacy with medical professionals when it is determined that professional help is needed. Medical professionals spend a limited amount of time interacting and observing the children they are charged with serving, therefore the judgments and observations of parents and teachers become crucial in the diagnostic process. Once identified as ADHD, interventions and treatments for this disorder include the highly researched and reviewed psychosocial therapies and psychostimulant medication. These two well-researched treatments will be discussed briefly.

Psychosocial therapies include the development of behavioral strategies to help families and educators work with the child's present level of functioning. The goal is to make the necessary accommodations within the child's environment in order to maximize the child's performance. One model of psychosocial

therapy that has proven effective is parent training. In a recent investigation, which utilized a community sample, parent training was found to increase the mothers' sense of well being and improved clinical symptoms in 53 percent of the children whose parents received it (Edmund et al. 2001). Another common behavioral intervention is the development of a plan that all adults involved with the child agree to implement in various settings. This may include changes to the environmental arrangements at home or in the classroom, it may provide suggestions for the parents and teachers in their interactions with the child, and it may provide for the administration of consequences for inappropriate behavior. Environmental arrangements should be individualized as much as possible to allow for a structure and routine that permits the child to engage in developmental experiences that provide the adults with numerous opportunities for positive interaction. Techniques to facilitate the acquisition of appropriate behavior include the application of behavior management principles. These principles include clear and consistent expectations with an abundance of opportunities to provide positive reinforcement and feedback in order to increase desirable behaviors. While at the same time, these principals provide for the ability to reflect and gain composure through time-outs, and other procedures with the goal of decreasing undesirable behaviors.

Although many parents of children with ADHD do not support the use of psychostimulant intervention, research has proven that it is more effective in reducing children's ADHD symptoms than psychosocial therapies alone (Bussing and Gary 2001). Between 70 percent and 90 percent of children prescribed medication for ADHD will have a positive response to the medications. The most commonly administered medications are stimulants that include Ritalin and Dexedrine. Although administering stimulants to a child who already may exhibit excessive motor activity is counterintuitive, research is providing insights into their mechanism of action. Stimulant medications are thought to alter the chemical functioning in the frontal lobe region of the brain, increasing the child's ability to attend to and focus on a task. Ritalin specifically works by increasing the extracellular dopamine levels, which in turn activates the motivation and drive of the individual.

The Multimodal Treatment Study of Children

with Attention-Deficit/Hyperactivity Disorder (the MTA study) is a cooperative treatment study performed by six independent research teams (MTA Cooperative Group) in collaboration with the Division of Services and Intervention Research, National Institute of Mental Health, and the Office of Special Education Programs, U.S. Department of Education. The MTA Cooperative Group conducted an investigation of treatment practices used in children diagnosed with ADHD over fourteen months, at six different sites in the United States, and utilized children from 7 to 9.9 years of age (MTA Cooperative Group 1999). Each child was randomly assigned to one of four treatment groups: medication, intensive behavioral treatment, combined medication and behavioral treatment, and standard care offered by providers in the community. Results indicated that there was a reduction in symptoms in all groups but that the medication and the combined medication/behavioral therapy groups showed significantly greater improvement. The combined group did not differ significantly from the medication group on ADHD symptoms, but behavioral therapy did help to reduce other coexisting symptoms that included oppositional/aggressive behavior and internalizing behavior. Given that research has found medication to be one of the most effective treatments, it stands to reason that the trend to prescribe stimulants for ADHD will continue.

MOOD DISORDERS: DEPRESSION AND BIPOLAR DISORDER

Mood disorders have been called the "common cold" of psychiatric illnesses. While everyone experiences shifts in moods from time to time, most of us do not understand the depths of depression or the highs and lows of bipolar disorder. It is estimated that more than 20 million Americans will suffer a mood disorder episode during their lifetime, however only one in three people who experience this debilitating disorder will seek treatment. Although it was once commonly thought that children did not experience mood disorders, clinical opinion has turned and it is now known that individuals throughout the lifespan can and do experience the helplessness that accompanies them. As with all psychiatric disorders, mood disorders are diagnosed with the use of the DSM-IV, which divides them into depressive disorders and bipolar disorders.

Depression is a mood disorder that is characterized by changes in emotion, motivation, physical well-being, and thoughts. The emotional state of individuals experiencing depression can be characterized as overwhelming feelings of sadness or worthlessness. Changes in motivational states are recognized as a change in an individual's behavior. These behavioral changes may include changes in friendships or stopping associations with friends altogether, changes in recreational activities or stopping the participation in these activities, and changes in school work, most often resulting in a decline in grades. The changes in physical well-being are often observed through a behavioral change in the individual that is different from their normal pattern of behavior. These can include alterations such as eating and sleeping too much or too little, disregarding personal hygiene and appearance, and having vague physical complaints such as aches and pains that have no origin. Changes in thought and cognition also occur which help to sustain the disorder in the individual as they believe that they are worthless, ugly, unable to do anything right, and that life is hopeless for them.

Research has found that symptoms of depression manifest differently in children, adolescents, and adults, fueling the debate over whether children actually experience depression. In children, depression is mixed with a larger array of behavioral characteristics that are often misunderstood leading to the difficulty in diagnosis. Depressed children often display aggression, irritability, undifferentiated anxiety, antisocial behavior, and school failure. In addition, depression often occurs in conjunction with other disorders such as conduct disorder, substance abuse, eating disorders, and anxiety disorders. According to the American Academy of Child and Adolescent Psychiatry, approximately 5 percent of children and adolescents experience depression (American Academy of Child and Adolescent Psychiatry 2004b).

Bipolar disorder, known throughout most of the twentieth century as manic-depressive illness, is experiencing rising rates of diagnosis in children and adolescents. Just as it was thought that children did not experience depression, it was also believed that bipolar illness did not occur in individuals until late adolescence or early adulthood. Although it is estimated that between 1–2 percent of adults worldwide are affected by bipolar disorder, due to co-morbid conditions, estimates of children afflicted

with the disorder are presumed to be inaccurate. Current diagnosis of bipolar disorder indicates that approximately 1 million children and adolescents in the United States are affected. However, according to the American Academy of Child and Adolescent Psychiatry, up to one-third of the children and adolescents currently diagnosed with depression may actually be experiencing early-onset bipolar disorder. In addition, it is suspected that many of the children currently diagnosed with ADHD may also have early-onset bipolar disorder (Papolos and Papolos 1999).

While depression is characterized by mood states that are low, individuals who suffer from bipolar disorder experience exaggerated mood states. An individual with bipolar disorder is depressed at times and then swings to the other end of the mood spectrum and has heightened levels of activity, ideas, and energy known as mania. Bipolar disorder presents itself differently in adults and children, which initially led to the belief that children and adolescents did not experience it. The DSM-IV criteria for the classification of bipolar disorder requires that the manic and depressive episodes that the individual experiences last for a prescribed number of days or weeks. However, this is not the pattern that is generally demonstrated by children. Children with bipolar disorder experience a chronic and erratic course with many shifts in mood throughout a day. Thus, many children and adolescents do not meet the diagnostic criteria specified in the DSM-IV. Additionally, as there is a great deal of overlap in the demonstration of symptoms in children and adolescents, frequently these individuals are diagnosed with other psychiatric labels such as ADHD, depression, oppositional defiant disorder, obsessive-compulsive disorder, or separation anxiety disorder.

EDUCATION AND TREATMENT FOR MOOD DISORDERS

For diagnosis and treatment of mood disorders, the involvement of parents, teachers, and other important adults in a child's life cannot be overstated. As with many psychiatric disorders, there is no conclusive medical test for these disorders. The observation, recording, and accurate reporting of behaviors to medical professionals are necessary in order to receive an accurate diagnosis and the proper treatment. This

is especially important with mood spectrum disorders as the treatment for depression can facilitate the onset of mania in an incorrectly diagnosed individual. For this reason, it is essential to incorporate an educational component into any diagnosis and treatment of mood disorders; both the individual with the disorder and his or her family need to be educated about the course, symptoms, patterns, treatment options, and side effects of medications. As with many of the psychiatric disorders, both psychological interventions and medical treatments have proven effective in the treatment of mood disorders. In addition, new research indicates that interactions within the family setting may be indicative of poorer social functioning in depressed adolescents. A high level of expressed emotion by one or both of the parents is associated with the presence of more depressive symptoms in the adolescent. Expressed emotion is assessed on an individual basis, utilizing a standardized tool. A family with high expressed emotion as an interactional style would display excessive criticism, hostility, or emotional over involvement. In these circumstances, a familywide intervention would be appropriate to assist the depressed individual in their recovery.

Two of the individual psychological interventions that have proven effective in treating depressed individuals are cognitive therapy and interpersonal psychotherapy. Both interventions are structured and time-limited in their approaches, geared toward developing the increasing competence of the individual. Dr. Aaron Beck detailed his view of depressive symptomatology in 1973 when he described individuals as having acquired cognitive schemas that are characterized by self-devaluation and lack of confidence about the future. The habitual negative thoughts magnify and expand depressed individuals' negative experiences as they begin to attend to only the negative cues in the environment. Cognitive therapy teaches the depressed individual to challenge the persistent negative thoughts. Drs. Gerald Klerman and Myrna Weissman developed interpersonal psychotherapy (Klerman and Weissman 1986). Interpersonal psychotherapy differs from cognitive therapy in that it works to improve an individual's self-concept, communication skills, and social relationships.

Individual and family therapies are an important part of treatment for bipolar disorder as well. Individuals who are bipolar need lifestyle management strategies. Keeping schedules are extremely impor-

tant as fluctuating schedules can destabilize circadian rhythms. Time zone changes and sleep deprivation can cause many difficulties so that regular bedtimes and wakeup times are necessary to keep children stable. Diet management can also be important as caffeine, alcohol, and recreational drug use can trigger a manic episode. In addition, families need to learn how to reduce environmental stress that may trigger episodes. A stable, steady home that avoids too much negatively expressed emotion is essential and therapists can teach parents and children how to minimize discord within the family.

Antidepressants are the medical treatment for depression. There are numerous antidepressants on the market and current research has brought more effective treatments with fewer side effects. Medications such as Prozac, Zoloft, Paxil, and Elavil have been used to reduce the symptoms of depression in both children and adolescents with successful results. However, as with all medications there are side effects that may occur within individuals and need to be monitored. These side effects can include insomnia, agitation, nausea, dizziness, and headache.

The use of antidepressants for individuals experiencing a mood disorder is very risky. This is a major concern due to the frequency with which bipolar illness is misdiagnosed as depression. For individuals with bipolar disorder, antidepressants may trigger bouts of mania, increased irritability, and aggression. Thus, the possibility of bipolar disorder must be ruled out before antidepressants are prescribed. For bipolar disorder, mood stabilizers are the main medical treatment. The mood stabilizer with the most history of use is lithium carbonate, however many new mood stabilizers have become available. One of the most important new drugs to be made available in the treatment of bipolar disorder is the anticonvulsant Lamictal. The FDA approved this medication in 2003 for long-term treatments. In addition to these medications, there are many antipsychotic drugs that have been used to treat psychotic symptoms, anxiety states, and to break up rapid mood-cycling swings.

One last important point to be made about individuals experiencing mood disorders is the connection with suicide. According to the American Academy of Pediatrics, suicidal adolescents often display depressive symptoms (2001). In 2000, the National Center for Health Statistics indicated that suicide was the third leading cause of death in ado-

lescents between the ages of thirteen and nineteen. Additionally, although suicide is rare, 1,921 individuals between the ages of ten and nineteen committed suicide in the United States in the year 2000. However, far more than that number either contemplated suicide or attempted it unsuccessfully. Although females have higher rates of depressed moods and are more likely to attempt suicide than males, males are more likely to be successful in their attempts. Depressed adolescents are particularly at risk for suicidal behavior and it is crucial for them to be seen immediately by a physician who has expertise in this area. Pediatricians, general practitioners, and psychiatrists are the first line of treatment for depressed and suicidal children. Frequently these children are prescribed antidepressants to combat their illness. Controversy over the efficacy of this practice has been widely discussed in recent news reports. Ultimately, the FDA will determine whether the newest class of antidepressants, selective serotonin reuptake inhibitors (SSRIs), will be approved for prescription to children. Concerns over the practice specifically relate to increased risk of suicidal behavior in children and adolescents. With research and investigations ongoing, the American Academy of Child and Adolescent Psychiatry has advocated for enhanced warnings on SSRI medications. Additionally, this organization emphasizes the need for close monitoring of children and adolescents being treated with these substances (2004a).

ANXIETY DISORDERS

All individuals experience anxiety to some degree. Low levels of anxiety can help a person to remain alert in situations that require focus and can also improve performance. In fact, anxiety is considered normal at specific points in development. One example of this is the anxieties that infants exhibit starting at about eight months of age upon separation from individuals to whom they are attached. However, high levels of anxiety can be debilitating and cause interference with the daily activities of life such as separating from parents, going to school or work, and making friends. Attacks of anxiety can arise suddenly and last for a few seconds, or they can develop gradually, over a period of days and last for years. Anxiety that lasts for a longer period of time and interferes with daily functioning is known as an anxiety disorder. Anxiety dis-

orders are among the most common childhood and adult mental health disorders. The understanding of anxiety in childhood and adolescence has increased within the past decade due in part to the development of new assessment measures that differentiate among types of chronic anxiety. Approximately 12–20 percent of children and adolescents are afflicted with this disorder (Costello and Angold 1995). Anxiety disorders are characterized by excessive amounts of fear, worry, and uneasiness, and cause significant impairment in academic, social, and familial functioning. The anxiety that is experienced by some individuals is so distressing that depression can occur, or anxiety and depression can coexist, or depression can come first and trigger an anxiety disorder.

There are many types of anxiety disorders. Table 29.2 presents a brief description of each subtype. Children and adolescents can develop any of these subtypes; however some of the subtypes are more common in childhood than others. Younger children tend to have separation anxiety disorder, specific phobias, and early symptoms of obsessive-compulsive disorder, while generalized anxiety disorder and social anxiety disorder are more common to middle childhood and adolescence, and panic disorder usually occurs in adolescence. Another subtype of anxiety disorder, post-traumatic stress disorder, can occur at any point that a trauma is experienced. The DSM-IV is used to diagnose anxiety disorders based on the clinical judgment of presenting symptoms, while utilizing specific diagnostic criteria to determine the subtype of the anxiety disorder and to rule out other coexisting disorders. In addition, new measures used to diagnose anxiety in children include diagnostic interviews based on DSM-IV symptomology.

EDUCATION AND TREATMENT OF ANXIETY DISORDERS

Much like other mental health disorders, anxiety disorders are caused by a combination of biological, familial, and environmental factors. Thus, education and treatment follows a similar course. The individuals and their families learn about the specific anxiety disorder, how it manifests in the individual, early signs and symptoms, and ways to control or handle the anxiety. Treatments can follow one of the many psychosocial therapies available for anxiety disorders, medical intervention can involve using a variety of

Table 29.2

Anxiety Disorder Subtypes with Brief Descriptions

Separation Anxiety Disorder	Persistent thoughts and fears about safety for self and parents, school refusal, physical complaints, extreme worry over sleeping away from home, trouble sleeping, and nightmares.
Specific Phobia	Irrational fear reaction to a specific object or situation such as spiders or heights. Can lead to the avoidance of everyday situations.
Generalized Anxiety Disorder	Characterized by excessive, chronic, and unrealistic worry that lasts six months or more. Symptoms may include trembling, physical complaints, insomnia, and irritability.
Social Anxiety Disorder	Extreme anxiety at the thought of being judged by others. Irrational fear of behaving in a way that will cause embarrassment. Physical symptoms may include heart palpitations, faintness, trembling, and profuse sweating.
Panic Disorder	Severe attacks of panic that can occur in a variety of situations and results in physical symptoms such as heart palpitations, chest pain, sweating, fear of dying, fear of losing control, and fear of unreality.
Obsessive-Compulsive Disorder	Persistent recurring thoughts (obsessions) that reflect fears or anxiety. Obsessions lead the individual to perform a routine behavior (compulsions). Examples of compulsions include washing hands, repeating phrases, and turning lights on and off a certain number of times.
Post-Traumatic Stress Disorder	Follows exposure to a traumatic event such as assaults, death, and natural or man-made disasters. Symptoms include reliving the event through flashbacks or nightmares, avoidance behaviors and emotional numbing, and physiological arousal such as irritability and poor concentration.

Source: Anxiety Disorders Association of America (2004).

medications specifically oriented toward the individual's manifestation of the disorder, or treatment can involve a combination of approaches. As with all mental health disorders, involvement of the family is necessary to enhance treatment outcomes. Poor treatment outcomes in children have been associated with high rates of psychopathology in the family. Some investigations have proposed that poor treatment response is linked to parent-child relational factors and specifically that children of depressed mothers are at high risk for poor outcomes. Thus, investigation of family psychopathology and interactional patterns should be a part of a comprehensive evaluation for a child with anxiety disorder.

Psychosocial treatments for anxiety disorder have shown positive results, contributing to the development of a variety of therapy modalities, which include behavior therapy, relaxation techniques, cognitive therapy, and cognitive-behavior therapy. The goal of these treatments is to help the individual modify and gain control over unwanted behavior and/or to change harmful thought patterns. Within behavioral therapies, a very useful procedure has been to provide individuals with support and guidance during controlled exposure to the anxiety-provoking situation. The exposure, or systematic desensitization, to the anxiety-producing situation can be pre-

sented either as mental images or in real life, depending on the degree of anxiety and the individual's willingness to be exposed to the various situations. Frequently, this exposure will be paired with relaxation techniques that will allow the individual to develop the ability to cope with the stress of anxiety while controlling the physical symptoms. Relaxation techniques may involve breathing retraining, biofeedback, and exercise. Cognitive therapy used in anxiety disorders has the same goal as the cognitive therapy utilized for people diagnosed with depression. The individual examines his/her own feelings and learns to separate realistic from unrealistic thoughts. Combining behavioral therapy and cognitive therapy results in what is known as cognitive-behavioral therapy and provides the individual with a way to target not only their behavioral patterns but also their thought patterns.

Medication therapy for anxiety disorders includes the full range of antidepressants available, as well as anxiolytics (antianxiety medications), anticonvulsant medications, antipsychotic medications, and beta blockers. The most widely used class of drugs for the treatment of anxiety disorders, both in children and in adults, are selective serotonin reuptake inhibitors (SSRIs). This class of drug affects the concentration of the neurotransmitter serotonin in the brain. Com-

monly used SSRIs include Prozac, Zoloft, Paxil, and Luvox. The FDA has given approval to use the SSRIs Prozac, Zoloft, and Luvox in pediatric obsessive-compulsive disorder; however, it is frequently used off-label in the treatment of other anxiety disorders, with or without coexisting depressive symptoms. Although improvement in symptom severity can occur after one week of SSRI treatment, treatment trials are generally given for four to six weeks to assess the clinical response. Although SSRIs generally have minimal side effects, the typical side effects that do occur are similar to the physical symptoms experienced as a result of the anxiety disorder. These can include headache, nausea, sleep changes, jitteriness, and agitation. Therefore, careful monitoring of physical complaints while undergoing SSRI treatment is essential (Anxiety Disorders Association of America 2004).

Although both psychosocial and medication treatment regimens have been proven effective for anxiety disorders, often it is medical practice to utilize a combination of both. As medication therapy generally produces a quick reduction in symptoms, it is often the first line of defense against the anxiety disorder. However, whether medication intervention is a short-term or long-term treatment option, medication therapy should be paired with both family and individual psychosocial therapy in order to teach the skills that will be useful in the management of their specific anxiety disorder.

Micheline Malow-Iroff and Helen Johnson

PARENTING BEHAVIOR

The configuration of the American family has changed drastically over the last several decades due to the proliferation and acceptance in society of what constitutes family. Several widespread practices have propelled changing conceptions of family such as the increased incidences of divorce rates, single-parent families, mothers working outside of the home, blended families, extended families, and culturally and racially diverse families. As a result, the typical American family is a conglomerate of attitudes and behaviors that are as diverse as the cultures that make up the people in those families.

Divorce is a social problem that is estimated to af-

fect 40 percent of children born to married parents in the United States. Research indicates that approximately 25 percent of the children of divorce will show evidence of more adjustment difficulties than their counterparts from nondivorced families (Hetherington and Jodl 1994). These adjustment difficulties include academic problems, externalizing behaviors, internalizing behaviors, substance abuse problems, and social problems. As more divorces occur, so do more remarriages and the rate of remarriage has steadily grown producing a variety of blended families. As in divorced families, children in stepfamilies experience a higher level of adjustment problems than their counterparts in nondivorced families. Again, not all children will experience these difficulties. In fact the majority will not, with only 25 percent of the children in blended families experiencing adjustment difficulties like those associated with divorce (Heatherington and Stanley-Hagan 2002). Another result of the increased divorce rate is the rise in single-parent families. Mothers with custody of their children experience the most difficult transition during a divorce as they lose more income than a custodial father, resulting in a significant change in lifestyle for both the mother and her children. In addition, custodial mothers typically experience increased workloads, high rates of job instability, and residential moves to less desirable neighborhoods. Researchers emphasize the need for the continuation of a positive relationship between the divorced spouses in order to help children adjust during this stressful situation.

Maternal employment is also part of modern life in the United States. Women may choose to work outside of the home, in addition to their roles as mothers, for a variety of reasons. For some women, it may be a necessity of life in order to provide for their families. This may be due to the employment instability of their spouse, divorce, single-parent responsibilities, or the desire for increased income for their families. However, for an increasing majority of women, working outside of the home is a choice that they make in order to fulfill their own personal needs and career goals. Overall, research has found that maternal employment does not impact negatively on child development. However, in specific circumstances research has detected effects that relate to maternal employment. Jeanne Brooks-Gunn and colleagues (2002) reported detrimental cognitive effects for three-year-old children whose mothers went back to work full time prior to the

infant turning nine months old, as compared to mothers who stayed at home during the first nine months. These effects were less pronounced when the mothers worked less than thirty hours a week, were sensitive in their caregiving and had high-quality childcare outside of the home.

Another area of concern due to the rise in mothers working outside the home is “latchkey children.” *Latchkey children* is the term for the population of children who are home alone after school or when school is not in session. Latchkey children may be at risk for more difficulties due to the lack of adult supervision and guidance that they experience. Children left alone can engage in unsupervised peer contact, delinquency, and other externalizing behaviors. However, just as the experience of children who have working mothers varies, the experience of latchkey children varies. Working mothers need to find ways to effectively monitor their children’s behavior. Parental monitoring can help children cope more effectively with their latchkey experience. In addition to parental monitoring, successful latchkey experiences often include community after-school programs. After-school programs with warm supportive staff, flexible schedules, multiple activities, and opportunities for positive interaction have been associated with better academic achievement and social adjustment for latchkey children.

Parenting practices are a mix of behaviors that are acquired in interaction with the environment, culture, and individual. This view represents the ecological systems perspective as proposed by Uri Bronfenbrenner (1979). The ecological-systems perspective views parents and their practices as part of a broader system which takes into account the reciprocal, bi-directional influences of individual, family, school, workplace, and community practices, as well as state and national policies and legislation. A leading expert on parenting, Diana Baumrind, formulated a classification of parenting styles that has been widely used and validated in research on parenting (1971). The classification system posits that there are four main styles of parenting—authoritarian, authoritative, neglectful, and indulgent (Baumrind 1971). Each style is described as follows:

- An authoritarian parent is strict and punitive; placing firm limits and controls on the child

while allowing for little verbal exchange. Authoritarian parents may use physical punishment and coercion techniques with their children, often relying on negative interactions. Research has found that children of authoritarian parents frequently engage in more aggressive interactions.

- The authoritative parent encourages the mature, independent, and age-appropriate behavior of the child while maintaining rules but allowing for verbal exchange. Baumrind asserts that an authoritative parenting style is the best as it encourages parents to behave in a supportive, affectionate manner with their children while developing rules that govern their functioning.
- A neglectful parent is very uninvolved in the child’s life, not knowing where the child is or what he/she is doing. Children of neglectful parents tend to be socially incompetent and display low self-esteem.
- The indulgent parent is very involved in the child’s life, but places very few demands or restrictions on the child. These children may have difficulty regulating their behavior, displaying traits of egocentrism and noncompliance while maintaining difficulties in peer relations.

Authoritative parenting has been shown to be the most effective parenting style for several reasons. First, it allows for the parent to adopt a balance between autonomy and control. Children are given opportunities to develop independence within a framework of standards, limits, and guidance. Also, authoritative parenting allows children to engage in verbal interaction with parents. Within this type of atmosphere, children learn to express their views, knowing that their opinions are welcome and heard. Finally, the parental involvement that is characteristic of this style of parenting renders the child more receptive to parental influence. The links between child competence and authoritative parenting have been found across ethnic groups, social strata, and family structure.

DISCIPLINE

While parental demands and controls have been indicated as part of the most effective parenting style, it is also important to consider the methods parents use to

enforce those limits. This is often termed parental discipline. Martin Hoffman, an early researcher into parental discipline, identified three types of discipline styles (1970). These discipline styles include love withdrawal, power assertion, and induction. Love withdrawal and power assertion are the two discipline styles associated with poor child outcomes. Love withdrawal is a discipline technique in which the parents either refuse to interact with the child or verbally states their dislike for the child. It often incorporates an emphasis on losing a parent's love. Hoffman contends that this style of discipline fosters considerable anxiety in the child. The discipline style of power assertion is an attempt to gain control over the child. It is frequently associated with corporal (physical) punishment such as spanking. Due to the negative child outcomes associated with both of these discipline styles, researchers sometimes combine them into a spectrum of behaviors known as overreactive discipline. Overreactive discipline includes yelling, physical aggression, name-calling, criticism, threats, and unreasonable expectations. This form of discipline results in aggressive acting-out and antisocial behaviors that can lead to school difficulties, delinquency, substance abuse, and adult antisocial behavior.

The use of corporal punishment by parents is legal in every state in the United States; however, many other countries throughout the world have passed laws forbidding parents to physically punish their children. Sweden was the first country to pass this law in 1979, but has since been joined by Finland, Denmark, Norway, Austria, Cyprus, Latvia, Croatia, Germany, and Israel. Since the enactment of the antispanking law in Sweden, rates of juvenile delinquency, alcohol abuse, rape, and suicide have declined, although these trends may also be representative of changing social attitudes throughout Sweden. The message that this sends to the United States and like-minded countries is that corporal punishment may not be necessary to improve the well being of children. Corporal punishment has been associated with higher rates of immediate compliance in children, but is also associated with higher levels of aggression and problem behavior, and lower levels of behavioral control, concern for the welfare of others, and conformity to social rules. Despite research that indicates the contrary, parents from the Caribbean, the United States, Canada, and many other parts of the world continue to engage in corporal punishment as a means to discipline and control their chil-

dren. Physical punishment does not teach appropriate behavior, however it does provide a model of an out-of-control, aggressive, and potentially abusive parent. Thus, educating parents in culturally sensitive ways to alternative methods of discipline is good not only for the well being of the child, but also for the well being of society.

The last discipline technique—induction—is the one endorsed by psychologists, other mental-health professionals, and informed individuals around the world. Induction promotes the use of reason and explanation when disciplining children. It utilizes the warm, supportive relationship that exists between a child and an adult, incorporating time for interaction and reflection. The idea is to explain to the child the effect his or her action had on others. Induction does not focus the attention on the child's shortcomings and misbehavior, but instead teaches appropriate behavior, thought processes, and emotions. This allows the child to develop a sense of empathy for other people.

Inductive techniques are what parenting education programs focus on. These programs involve teaching parents more adaptive ways of interacting with children at various developmental stages in order to promote healthy functioning in children. Although parenting programs vary in their specific details, they generally provide parents with the opportunity to learn parental monitoring skills, how to engage in age-appropriate interactions with their children, and techniques for providing positive feedback to promote desirable behavior. Additionally, these programs teach parents how to give clear, reasonable instructions to their children and provide a variety of techniques for brief, nonphysical discipline. Changing parental discipline styles has been effective in mediating behavioral problems in children. Parental education is the key to informing parents about discipline style and what works and what does not work to facilitate healthy growth and development in children at every age.

Micheline Malow-Iroff and Helen Johnson

FAMILY STRESS AND COPING

Learning how to handle the circumstances and events of life is an ongoing process that all people share. As

children, our emotional abilities develop in response to our biological temperament, interaction with others, and the environmental conditions in which we have been placed. Stress is the individual's response to these life events and the events themselves are the stressors. Life events can be good or bad, challenging or easy; however, our interpretation of them and our ability to deal with these events vary. Not all stress impacts negatively on children and families. Low levels of stress can add excitement and challenge to life, prodding us to move ahead in school or work and to engage in new activities. Life events, and the stress they place on the individual, are not a problem until the individual finds he or she can no longer handle the situation competently and engages in poor coping skills. Symptoms of stress can include irritability, fear, depression, aggression, and substance use. Thus stress reactions occur on an individual level and are determined by a combination of cognitive and situational influences.

The interpretation of life events as stressful is what researcher Richard Lazarus (1996) has termed *cognitive appraisal*. A cognitive appraisal occurs when an individual interprets an event as harmful, threatening or challenging, and determines whether he/she possesses the resources necessary to cope with the event. According to Lazarus, appraisals of life events occur in a two-step process. First the individual engages in a primary appraisal to determine whether the event involves harm that has already occurred, is a threat that involves future danger, or is a challenge to be overcome. In the next step, the secondary appraisal, the individual evaluates his/her resources and determines how to cope with an event. Coping involves the strategies, skills, and abilities that the individual possesses to handle the stress. Thus for Lazarus, an individual's experience of stress is the balance between the primary and secondary appraisals; if a threat is perceived as high and the secondary appraisal determines that the challenge and resources are low, then the stress experienced by that individual is likely to be high.

Martin Seligman is another researcher who investigates how cognitive factors impact on coping with stress. Seligman classifies individuals into two categories, optimistic or pessimistic. Optimists tend to classify bad experiences as a temporary setback and realize that their behavior and the outcomes of a situation are changeable. However, pessimists gen-

erally relate bad experiences to flaws within themselves. These individuals are more likely to feel hopeless and depressed, and have a tendency toward poor health and underachievement at school or work (Seligman 1995).

The spectrum of situational stresses experienced by any individual can range from ordinary to extreme. Ordinary stressful experiences for children include taking exams at school, arguing with friends, and feeling jealous over another's success. When these events occur, a parent, trusted teacher, or competent friend can provide the guidance and skills necessary to help the child past these normal events. However, when stress is severe, the coping skills for this event may not be clear and the significant adults in a child's life may not have the ability to foster or implement effective strategies to handle these situations. Experiences of extreme stress can occur after one traumatic event such as the death of a loved one, an experience of victimization, or the divorce of a child's parents. It can also be present in children who live for years in abusive or neglectful families, in children who experience foster care placement, and in homes where there are individuals who have special physical, academic, or emotional needs. Additionally, researchers are documenting the detrimental effects of stress in children who live with the chronic conditions of poverty, family tension, and prejudice (Duncan and Brooks-Gunn 1997). Although these chronic conditions do not register as major life events in children's development, the accumulation of stress over time in these situations can lead to psychological disorders, physical illnesses, and destroyed lives in the same manner that stress experienced due to traumatic life events can lead to similar impaired health and functioning.

EDUCATION AND INTERVENTIONS FOR STRESS

Everyone experiences stressful events; however, how each person handles that stressful experience will vary from individual to individual. Parents and teachers can help children to cope effectively with stressful events in a number of ways. One way is to recognize that the significant adults in a child's life serve as models of behavior for how children will cope. Lev Vygotsky, a preeminent educational psy-

chology theorist, proposed that all mental functions have an external or social origin (1962). Young children acquire meaning and understanding of events through the communication and behavior of those around them. Thus, if a child's parents react to the daily stress at work by coming home, getting drunk, and/or yelling at their family members, the message communicated to the child will be to find ways to avoid or escape stressful situations. However, if the parent communicates to the child in a calm way the strong emotions and frustration they feel, their children will learn to express their feelings in increasingly normal and healthy ways. Learning that everyone has strong emotions at times and modeling appropriate methods of coping with those feelings will allow children to begin to express their own feelings.

Many researchers believe that children who approach stressful events with a problem-solving approach, rather than an avoidance strategy, will cope better with the event (Bridges 2003; Lazarus 1996; Seligman 1995). Additionally, children who have learned a number of coping strategies to handle life's ups and downs are placed in the most optimal situation for handling stressful events. As children age, they begin to see more alternatives for coping and tend to use more cognitive coping strategies. Research has found that by ten years of age, most children are able to use cognitive strategies such as shifting thoughts to a less stressful event and reframing situations so that every event is not personally directed. The adults in the child's life often model these techniques, so the child has learned in context what to do when things go awry. Additionally, as it is natural for children to tend to use these skills only in the stressful situations that they have learned to apply them toward, the adults can help them to generalize the use of these skills in other situations by adapting a problem-solving approach.

Difficulty occurs when children have not learned effective coping skills through experience or interaction in their environment. When families are overwhelmed by the stress, turmoil, and trauma present in their own lives, they do not engage in healthy coping strategies or resort to effective problem solving. Children in these families are trapped by the circumstance of their experience. In these cases, other, more competent adults and peers can step in to provide support and teach more effective prob-

lem-solving skills to the individual. One way to help children in these situations is to remove as many barriers to effective functioning as possible. This can lighten the child's load, enabling him/her to feel stronger and more successful in other situations. Gregg Duncan and Jeanne Brooks-Gunn (1997) have illustrated the need for this type of approach in their research on the pervasive negative developmental effects associated with children growing up in extreme poverty. Children who grow up in poverty are more likely to be born at a low birth weight, have higher infant mortality rates, experience learning disabilities, and drop out of high school, among other disturbing correlations. The physical and cognitive implications of residing and developing in this chronically stressful environment indicate a need for reform to educate and support children and families in this high-risk situation. Obviously, all stressful life events cannot be remediated by outside influences; however, teachers and other adults involved with children have the opportunity to interact in ways that can remove extra stressors whenever possible, and teach coping and problem-solving skills.

Some events that occur in life are beyond the control of the individual. When this happens repeatedly, children may take on a "learned helplessness" approach to situations. Learned helplessness is a theory proposed by Martin Seligman in 1975 to account for the depression that resulted from an individual's exposure to prolonged stress, negative experiences, or pain. Reformulations of the learned helplessness theory have propelled work on the impact of cognitive attributions on stress. Lazarus' ideas on cognitive appraisal and Seligman's work with optimistic and pessimistic children have expanded the understanding of why some individuals give up in situations where they feel they have no control (Lazarus 1996; Seligman 1995). It is important to note that Seligman believes that children's pessimistic attributions can be modified by adults who model effective coping skills, provide explanations that encourage further effort, and teach realistic ways of handling disappointing life experiences.

Recent events in the United States and around the world have left many children and adults feeling particularly vulnerable to stress. Traumatic events such as the Oklahoma City bombing and the terrorist attacks on the World Trade Center in New

York City and the Pentagon leave all individuals feeling defenseless. Exposure to traumatic experiences, whether a single event or chronic exposure to environmental stressors, have both short- and long-term consequences in children's lives, and the symptoms of post-traumatic stress disorder can contribute to physical, emotional, and educational impairments. Indicators of post-traumatic stress disorder include fears, repetitive nightmares, thought reenactment, and thought suppression. Often the numbing effect of the stress, combined with fear and depression, make it hard for teachers or other adults to identify a child in crisis, because they too have experienced the debilitating effects of stress. As the adults in the child's life become more irritable and less responsive or tolerant of others, this is when professionals are needed to step in. When an individual can no longer utilize normal coping and problem-solving approaches to handle the stress and negative emotional states in their lives, they need to seek the help of a psychologist, psychiatrist, or a professional therapist. The recognition of individual differences in the response to stress or trauma is especially important as variations in feelings and functioning are dependent on many factors including developmental level and access to support systems. After the Oklahoma City bombing in 1995, professionals made recommendations to teachers and other caring adults for dealing with individuals who are experiencing high levels of stress. A summary of these recommendations made by R. Gurwitsch and colleagues (2001) is included below:

- Reinforce the safety and security of the child.
- Allow children to retell events in their own way.
- Encourage children to talk about their feelings and worries. Young children may not have words to express their feelings; help them to develop their expressive language skills through hands-on activities.
- Help children to develop a realistic understanding of what happened by providing age-appropriate information.
- Provide reassurance to children and help them to develop skills to handle stressful feelings over time.
- Protect children from reexposure to frightening or traumatic situations.

Micheline Malow-Iroff and Helen Johnson

CHILD MALTREATMENT

Although it is difficult to imagine, many children each year are killed or injured by their parents, caregivers, or other adults with whom they come in contact. Child abuse is the product of a disturbed environment. Personality characteristics of the adults present in the home interact with environmental stress and the characteristics of the child to produce harmful negative developmental effects. Each year in the United States, child welfare agencies receive more than three million allegations of abuse. Laws in many states in the United States make "mandated reporters" of teachers, doctors, law enforcement officials and mental health professionals, to name just a few of the professionals required to report the suspicion of any form of abuse directed toward a child. The mandated reporter is not required to have proof of the alleged abuse or neglect; the law requires only that there is "reasonable cause to suspect" that a child has been maltreated. Many school systems set their own policies for reporting concerns of child maltreatment. These policies support the state guidelines and provide teachers with a system of reporting through the school. Due to the procedural guidelines that now govern the reporting of maltreatment, cases of maltreatment can be identified and the children helped. The 2002 statistics from the National Clearinghouse on Child Abuse and Neglect reported that 879,000 children were identified as victims of abuse and neglect in 2000.

The conditions suffered by maltreated children are varied. Abuse can be everything from sporadic physical abuse to long-term, severe neglect. Among the types of maltreatment are physical and sexual abuse; the fostering of delinquency; lack of supervision; medical, nutritional and educational neglect; and drug or alcohol abuse. The National Clearinghouse on Child Abuse and Neglect estimates that caregivers kill two thousand children every year. However, the most common abuser is not an uncontrolled physical abuser who ends up killing his/her child. Most physical abuse is mild to moderate in severity and represents approximately 23 percent of the maltreatment cases reported. Sexual, emotional, and other forms of abuse represent another 23 percent of reported maltreatment. The most common abuser is an impoverished single

mother who, due to her social circumstance and poor coping skills, neglects her child or children. Issues of neglect involve approximately 54 percent of the maltreatment cases nationwide.

Maltreatment is also thought to be a process of intergenerational transmission. Parents who use physical punishment to control their children often were physically punished themselves as children. Approximately one-third of parents who abuse their children were victims of abuse themselves. Parents who respond using overreactive disciplinary measures may not have sufficient resources or the necessary support from others to see them through difficult periods. Breaking the intergenerational cycle is difficult, but possible if there are models of loving, caring parenting in the adult's background as well as adequate social and emotional support in their present relationships.

Martin Teicher, an associate professor of psychiatry at Harvard Medical School and a leading researcher into the field of neurobiological effects of maltreatment, is a proponent of the view that early exposure to various forms of maltreatment alters the development of the limbic systems in these patients (2000). The limbic system is a neural center that is integral in the regulation of emotion and memory. Two of the important structural components within the limbic system are the amygdala and the hippocampus, both of which are in the temporal lobe of the brain. The amygdala functions to create the emotional content of memories and is responsible for the conditioning of fear and aggression. The hippocampus is important in the creation and retrieval of both emotional and verbal memories. Dr. Teicher proposes that both structures could be damaged through heightened electrical activity or the excessive exposure to stress hormones that victims of maltreatment experience.

Maltreated children are at high risk for displaying many medical problems and psychological disorders. The developmental consequences of child maltreatment include poor emotional regulation, attachment difficulties, problems in peer relationships, difficulty in school, anxiety disorders, depression, conduct disorder, aggression, substance use and delinquency. Two specific medical conditions observed in maltreated children are "failure to thrive" and "psychosocial dwarfism." Up to 5 percent of children admitted to pediatric hospi-

tals suffer from failure to thrive syndrome. Infants afflicted with this condition are generally of low weight, small size, and poor physical development. The condition is diagnosed as feeding disorders of infancy and early childhood due to the limited nourishment that the child has received in infancy. However, the condition is complicated by psychosocial factors of poverty, lack of education, neglect, and sometimes abuse. If medical and social-service interventions are obtained in a timely fashion, the infant with failure to thrive can recover, although if not treated the child can be left with lifelong disabilities or die.

While failure to thrive is a condition of infancy and early childhood, psychosocial dwarfism is the result of severe and prolonged stress due to physical and psychological abuse. In this condition, also known as Kasper-Hauser syndrome, the child's physical, cognitive, and social development is impaired due to the effects of prolonged stress on endocrine function. The abuse depresses the endocrine function, which in turn slows the child's physical and mental growth. A child with psychosocial dwarfism often appears to be many years younger than his/her actual chronological age.

Reliable data on the proportion of children that survive abuse and become developmentally disabled due to the maltreatment is not available. One estimate indicates that child maltreatment may be responsible for 15 percent of new cases of developmental disabilities each year. Children with disabilities are a vulnerable population due to reporting difficulties, language barriers, and the isolation that they and their families often experience. A related issue is the maltreatment of children who are already disabled. The increased stress placed on a family when there is a child with developmental disabilities cannot be underestimated. This is an area of great concern suggesting that child maltreatment contributes to developmental disabilities and that children with disabilities are at high risk for child maltreatment.

PREVENTION AND INTERVENTION

Early researchers took a psychological perspective when trying to understand the consequences of maltreatment. It was thought that the emotional and social difficulties perpetuated by adults who had suf-

ferred child maltreatment could be remediated via therapy. Indeed, individuals who successfully break out of the pattern of abuse have received therapy and do have positive models and a support system to draw upon. Thus, the importance of receiving professional help in these circumstances cannot be overstated. However, new insights into childhood maltreatment, such as those asserted by Dr. Teicher, indicate that the brain is physically altered by the horrific experience of maltreatment. The permanent alteration of the brain, through molecular and neurobiological effects that alter the neural developmental pathways, suggests a grim prognosis for those exposed to maltreatment. Thus, the effort to educate and prevent maltreatment before it begins may be the best way to alleviate this harmful state.

As indicated above, the best way to eradicate and treat victims of abuse is to prevent it before it occurs. In order to do this, programs must be put into place that provide support and assistance to the most vulnerable part of our population. As the most common area of maltreatment is the neglect of children within single-mother households, this is a population of individuals that need to be targeted for intensive support. The 2000 U.S. Bureau of the Census report indicates that single-mother families with children under the age of eighteen signify the largest segment of the population living in poverty, representing 26.5 percent (Clark et al. 2003). Expressed in 1999 dollars, the poverty threshold for families with children under the age of eighteen was \$13,410. Thus, individuals living in families with total cash income below this level were counted as poor. This represents 12.4 percent of the U.S. population, approximately 34 million people. Furthermore, the Current Population Survey indicates that 44.2 percent of children under the age of fifteen, related and unrelated to the families they live with, exist in poverty (Clark et al. 2003). The consequence of these high rates of poverty on children and families is catastrophic and avoiding the persistent poverty that plagues many families is key to facilitating healthy outcomes. Greg Duncan and Jeanne Brooks-Gunn (2004), two researchers in the field of adverse outcomes on children due to poverty, recommend that families with young children be exempted from the time limits, sanctions, and categorical restrictions that are currently part of welfare re-

form. Additionally, they suggest that well-designed parenting programs can help to alleviate problems. Reducing stress, providing support, teaching problem-solving strategies, and offering assistance through publicly funded programs for families and children will go a long way toward preventing the maltreatment of children.

Micheline Malow-Iroff and Helen Johnson

FAMILIES OF CHILDREN WITH SPECIAL NEEDS

Increasing attention has been given to the role of the family when working with children with special needs. This shift in focus represents an increased attention paid to the ecological perspective of development. The child's disabilities are not seen in isolation, but the development of the child is seen within the context of the family and the community. The reaction to having a child with special needs will vary across families. Families of children with special needs were once thought to progress through a grieving process, much like a person does at the loss of a loved one. Often the response to the birth or diagnosis of a child with special needs will be one of shock, denial, sadness, anxiety, or anger. However, research does not support the idea that families progress through these emotions in a specific order before they move on to an acceptance phase. In truth, a family's response to learning that their child has special needs will be as varied as the personalities of the individuals within that family and will also be impacted by the developmental status of the child, the support available at home and in the community, the attitudes of the culture, and the family's economic resources.

EDUCATIONAL SERVICES FOR CHILDREN WITH SPECIAL NEEDS AND THEIR FAMILIES

Families of children with special needs are mobilized into action to provide for their child in different ways. The identification of a disability can come from a pediatrician, a teacher, the parents, other caring friends,

or members of the child's family. After the recognition that a disability is present, state and local agencies provide for medical and developmental evaluations to determine the need for intervention services. Once a family has acknowledged that they are living with a child who has special needs, a new world of service delivery and intervention practices opens up to them. Families must embrace the role of their child's advocate, as the only way for their child with special needs to receive services is through the federal- and state-funded agencies. Family involvement in the process to obtain special services for children with special needs began in 1974 when congress passed the *Family Education Rights and Privacy Act* (FERPA), also known as the Buckley Amendment. In addition to the rights of knowledge, the ability to challenge decisions, and the guarantees of privacy within the administration of educational services, this amendment legally empowered parents to take an active role in the determination and provision of a child's educational services. Subsequent legislation over the last thirty years has reauthorized the family's, the student's, and the school's rights and obligations to provide services to children with special needs.

With the passage of the *Education for All Handicapped Children Act of 1975* (Public Law 94-142), Congress asserted that the national interest was served when the federal government supported programs for children with special needs. This law provided for a free and appropriate public education (FAPE) for all children aged five through twenty-one. In addition, the law required a comprehensive, nondiscriminatory evaluation to identify the child's needs, a written individualized education plan (IEP), and stated that the child's educational services be provided in the least restrictive environment (LRE). Passage of each new law has reauthorized and extended these basic rights. In 1990, the *Individuals with Disabilities Education Act* (IDEA), also known as Public Law 101-476, passed in Congress. This law updated terminology to reflect the ideology that the disability does not define the person, but that they are individuals with disabilities that need to be served. IDEA was amended in 1997 with the passage of Public Law 105-17, also known as IDEA 97. IDEA 97 provided an expanded role for parents in the decisionmaking process, including parents on the team that makes educational placement decisions. Additionally, schools were required to create and bear the cost of a system of mediation to resolve conflicts between schools and families. Although

IDEA 97 is up for reauthorization, it is uncertain when this will occur. Figure 29.1 details the important components mandated by IDEA 97.

The implementation of federal laws involves agencies at the federal, state, and local levels. Each state must present a plan to the U.S. Office of Special Education Programs to ensure compliance with federal regulations in order to receive federal funding. Although the state laws must comply with the federal laws, the implementation, description, and criteria for classifying children with special needs is slightly different from state to state. At the local level, departments of education and early-intervention agencies are responsible for the delivery of special education services. As a result of the many layers of governmental involvement for the implementation of special education services, the laws related to special education are complex. For many families this complexity proves to be a barrier to the services that each child is entitled to by law. These barriers become even greater when the family is from another culture and/or for whom English is not their primary language. Efforts are being continually made to reach out and expand the opportunities of families in the education of their children. The latest version of the *Elementary and Secondary Education Act of 1965* is an example of this. The *Elementary and Secondary Education Act of 2001*, also known as the *No Child Left Behind Act of 2001* (Public Law 107-110), redefined the federal role in education from kindergarten through grade twelve. It provides for stronger accountability of academic results, more flexibility on how local school districts can allocate their federal funding, gives more options to parents from disadvantaged backgrounds on how and where their children will be educated, emphasizes the use of proven teaching methods and curricula, dictates the need for highly qualified teachers in every classroom, and focuses on enabling limited English proficient students in the acquisition of English. *No Child Left Behind 2001* has several implications for students with special needs. First it dictates that children with disabilities will participate in the same curriculum content as general education students. In addition, it states that all children must show adequate yearly progress. This means that each child must show a year's worth of progress in a year's time. Frequently adequate yearly progress will be measured with standardized state assessments. Individuals with disabilities have four options in regard to state assessments: 1) they can take

Figure 29.1 Major Provisions of IDEA 97

Purpose:

To assure a free and appropriate public education to all children with provisions for special education to meet individual needs.

Type of Programs:

An individualized family special education plan (IFSP) for children birth–2.

An individualized education plan (IEP) for children 3–5 and 5–21.

Parent Participation:

Parents participate in all aspects of process, from identification to eligibility and modifications. Due process procedures must be followed.

Evaluations:

Nondiscriminatory with students tested in native language.

Ages served: Birth–21

Downward Extensions:

Part B—Special Education Preschool: 3–5 years old.

Part C—Early Intervention: birth–2 years for children and their families.

Definition of Disability: 13 Federal Categories

Autism

Deaf-Blind

Emotional Disturbance

Hearing Impairment

Specific Learning Disabilities

Mental Retardation

Multiple Disabilities

Orthopedic Impairment

Other Health Impairments

Speech or Language Impairment

Traumatic Brain Injury

Visual Impairment

Developmental Delay (3–9 years of age only)

Placement:

Least Restrictive Environment: Attempts to educate child with their special education services in the general education setting must be demonstrated before a more restrictive placement can be made.

Source: Individuals with Disabilities Education Act Amendments of 1997.

the regular assessment with everyone else, 2) they can take the regular assessment with modifications, 3) they can take an alternative assessment that is aligned to their grade level standard, or 4) they can take an alternative assessment aligned to alternate achievement standards as set forth in their individualized education plan.

The most important component to successful family involvement in the provision of services to children with special needs is information. If the family is kept informed and the lines of communication are open between the home and the school then there are greater opportunities for successful collaboration between the various individuals working with the child. All too often, barriers to family participation in schools get in the way of active family involve-

ment. These barriers include logistical concerns such as transportation or time of meetings, communication problems such as language differences or professional jargon, and lack of understanding about schools and their complex set of rules. It is essential for teachers and service providers to overcome these barriers in order to work with both the children who have special needs and the families that love them.

Micheline Malow-Iroff and Helen Johnson

RISKY BEHAVIOR IN ADOLESCENTS

In adolescence, significant changes in the developmental status and tasks of the individual propel the individual toward behaviors, including initiation of drinking, drug abuse, and early sexual intercourse, that entail significant health risks. Indeed, one of the striking aspects of these behaviors is that they pose threats to both the individual's physical and emotional well being, as well as to educational and occupational success. The classic work of psychologists John Donovan and Richard Jessor (1985) on problem-behavior theory demonstrated that these behaviors tend to occur in clusters within individuals, which means that adolescents are likely to be engaged in more than one type of risky behavior, if they are engaged in any. The initiation and maintenance of problem behaviors in early adolescence is a significant predictor of the educational and occupational trajectories of individuals. Psychologists John Schulenberg and Jennifer Maggs (2002) have documented the importance of early involvement in problem behaviors to these diverging life paths.

The rapid pace of physical and cognitive changes during early adolescence influences all aspects of life, and places children at heightened risk for the development of maladaptive coping strategies that include drinking, substance abuse, and the early initiation of sexual behavior. Dramatic shifts in the organization of families and the workplace have increased risk factors to children in all social groups and income levels. Children and young adolescents spend more hours of unsupervised activity than at any time in

Table 29.3

Monitoring the Future Survey 2002/2003 Data: Marijuana/Hashish

	8th grade	10th grade	12th grade
Lifetime	19.2/17.5	30.3/28.2	36.2/34.9
Past year	14.6/12.8	30.3/28.2	36.2/21.2
Past month	8.3/7.5	17.8/17.0	21.5/21.2

Source: National Institute on Drug Abuse, Monitoring the Future Survey (2003).

recent decades. Early onset of substance and alcohol abuse, and involvement in sexual behavior, is associated with problems that continue to be more severe and prolonged in adulthood.

ALCOHOL AND SUBSTANCE ABUSE

During early adolescence, the majority of students have their first encounter with substance use in social settings. Although in many American communities some experimentation with substance use is “normative” for adolescents, there is strong evidence of links between early onset of substance and alcohol abuse and involvement in violence. There is also strong evidence that this early-onset population is particularly vulnerable to extended involvement in problem behavior.

In the United States, drug abuse trends among students in eighth, tenth, and twelfth grades are studied annually through the Monitoring the Future Survey (MTF) (Johnston et al. 2004). MTF collects data from students on past-month, past-year, and lifetime drug-abuse experiences. The 2003 responses indicate an overall decline in the use of illicit drugs among eighth and tenth graders. This is exemplified by the data on marijuana/hashish use in Table 29.3.

It is worth noting that despite the overall declines in use of marijuana, almost 50 percent of twelfth graders had experimented with it.

While lifetime smoking rates declined among students in all three grades (see Table 29.4), the rates of smoking within the past month did not decline among eighth and tenth graders. This suggests that the decline in smoking that has been observed over the past few years is dissipating.

Furthermore, the MTF 2003 data with regard to

Table 29.4

Monitoring the Future Survey 2002/2003 Data: Cigarettes and Smokeless Tobacco

	8th grade	10th grade	12th grade
Ever used	31.4/28.4	47.7/43.0	57.2/53.7
Past month	10.7/10.2	17.7/16.7	26.7/24.4
Daily use (past month)	5.1/4.5	10.1/8.9	16.9/15.8

Source: National Institute on Drug Abuse, Monitoring the Future Survey (2003).

Table 29.5

Monitoring the Future Survey 2002/2003 Data: Alcohol

	8th grade	10th grade	12th grade
Lifetime	47.0/45.6	66.9/66.0	78.4/76.6
Last year	38.7/37.2	60.0/59.3	71.5/70.1
Last month	19.6/19.7	35.4/35.4	48.6/47.5

Source: National Institute on Drug Abuse, Monitoring the Future Survey (2003).

alcohol and prescription painkillers revealed no improvement. Alcohol use remained stable, with no significant changes in any grades on any measure (see Table 29.5).

Use of OxyContin and Vicodin also remained stable at rates that are of concern. In fact, among twelfth graders, Vicodin was the second most frequently used drug after marijuana.

It is apparent from these data that drinking and drug abuse pose persistent health challenges for American adolescents. Although many of these negative health consequences do not appear until adulthood, there is growing evidence that substance use can compromise adolescent health as well. For example, Patrick Johnson and Linda Richter’s recent analyses of the National Household Survey on Drug Abuse data found that adolescents who used alcohol reported lower self-perceived health than adolescents who abstained (2002). Johnson and Richter also found that overnight hospitalizations occurred more frequently among adolescents who consumed alcohol than among those who abstain.

Use of alcohol and painkillers has proven particularly impervious to prevention and intervention efforts. The fact that these substances are available

legally to individuals based on age and medical criteria heightens the difficulty of controlling access. Aside from direct health dangers that these substances pose, there is also extensive evidence that adolescents involved with drinking and drugs are more likely to become involved in risky sexual behavior as well as violence.

SEXUAL BEHAVIOR AND SEXUALLY TRANSMITTED DISEASES

Over the last few decades, there has been increasing concern about adolescent sexual behavior, pregnancy, and parenthood in the United States. Despite declines in the adolescent birth rates in the United States since World War II, the rates remain two to ten times higher than in other industrialized nations. There has also been a progressive increase in adolescent childbearing outside of marriage. A recent report from the Department of Health and Human Services (DHHS) indicated that between 1986 and 2000, the birth rate among adolescents increased by nearly 25 percent (Moore et al. 2002). This is of particular concern because the overwhelming majority of adolescents do not wish to become parents. According to recent DHHS data, 84 percent of adolescent pregnancies are unintended. In addition to the risks of pregnancy and unintended parenthood, sexually active adolescents are at very high risk for sexually transmitted infections (STIs) and exposure to human immunodeficiency virus (HIV). Dr. David Schonfeld (2000) reported that each year, approximately one of every four sexually active adolescents contracts an STI. Because the majority of sexual encounters before age fifteen are coercive, they are associated with poor protection from pregnancy and transmission of STIs. Alcohol and substance abuse also increase the likelihood of engaging in unprotected sexual behavior, which in turn increases the risk of transmission of STIs.

Adolescents and young adults are now a major risk group for the incidence of sexually transmitted diseases (STIs). Of the 18.9 million new cases of STIs occurring in 2000, 9.1 million (48 percent) were among those aged fifteen to twenty-four. Sixty percent of the 359,000 new reported gonorrhea cases in 2000 were among those aged fifteen to twenty-four. Because half of new infections are typically undiagnosed or unreported, this would mean that in 2000,

the estimated number of new gonorrhea cases among fifteen- to twenty-four year olds was actually 431,000.

Chlamydia is the most common STI among adolescents. In 2000, approximately 1.5 million of the 2.8 million new chlamydial infections were among fifteen- to twenty-four-year olds. The majority of individuals with this STI are unaware of their infection. Without screening to identify these infections, many remain unnoticed and untreated. Researcher Steven Belenko (2004) noted recently that in addition to heightened risk for HIV, untreated STIs place the individual at risk for other negative long-term health consequences. Up to 40 percent of women with untreated chlamydial infections experience pelvic inflammatory disease. Untreated STIs also are a risk factor for transmission of HIV; individuals with STIs are three to five times more likely to contract HIV. At the same time as biological factors make individuals with STIs more likely to contract HIV after exposure, HIV-infected individuals with STIs are more likely to transmit HIV to their sexual partners.

The incidence of adolescent HIV infection has been increasing. HIV destroys the body's immune system, and causes acquired immune deficiency syndrome (AIDS). There is an average of five to seven years between becoming infected with the virus and showing signs of illness. Consequently, most infected adolescents will not become ill until they are adults, and adolescent AIDS cases result from exposure earlier in childhood.

It is estimated that 850,000 to 950,000 Americans are HIV-infected, and that 25 percent are unaware of their infection. There are significant racial and ethnic disparities in HIV/AIDS cases in the United States. Approximately 78 percent of HIV-infected women are minorities. According to the U.S. Office of Minority Health, in 2000 HIV infection was the fifth leading cause of death for people between the ages of twenty-five and forty-four (2002). Many of these individuals became infected during adolescence. The Centers for Disease Control and Prevention (CDC) recently reported that approximately half of the new HIV infections were among fifteen- to twenty-four-year-olds, and the majority of these cases were infected through sexual contact (CDC 2002). According to the CDC, in 2000, young people accounted for a much greater proportion of HIV cases (13 percent) than AIDS cases (3 percent). In adolescents between ages thir-

teen and nineteen, a greater proportion of HIV cases occurred among females (61 percent) than males (39 percent). African Americans have been disproportionately affected by HIV, accounting for 56 percent of all cases ever reported among thirteen- to twenty-four-year-olds. One very problematic issue is that most infected youth are not aware that they have HIV. Belenko cites a recent survey of seven cities in which only 18 percent of infected adolescents knew they had the virus.

The choices that adolescents make about risky behaviors have serious consequences for both their immediate and long-term health. Education, prevention, and intervention efforts to address these critical issues will be considered in the next entry.

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ADOLESCENT HEALTH EDUCATION AND PREVENTION

The fundamental connection between education and prevention was highlighted in the 1989 report of the Carnegie Task Force on Education of Young Adolescents entitled *Turning Points: Preparing American Youth for the 21st Century*. This influential document emphasized the integral connection between health and education. The report indicted schools for failing to address adolescents' developmental, emotional, and cognitive needs, stating:

Caught in a vortex of changing demands, the engagement of many youth in learning diminishes, and their rates of alienation, substance abuse, absenteeism, and dropping out of school begin to rise. (Carnegie Task Force on Education of Young Adolescents 1989, 8–9)

Peer group affiliation and academic performance during early adolescence are powerful predictors of school completion and college attendance, as well as of involvement in risky behaviors. Children who experience academic difficulties, feel alienated from school, and/or engage in minor acts of delinquency during early adolescence are prone to become involved in more problematic behav-

ior, including substance abuse and risky sexual activity, in later adolescence. Consequently, prevention efforts have focused increasing attention on early adolescents, between the ages of ten and fourteen years.

ALCOHOL AND SUBSTANCE ABUSE PREVENTION

At the same time as school experiences may contribute to the initiation of problem behaviors, schools also play a central role in prevention efforts. School-based programs have the greatest potential to deliver cost-efficient, broad-based prevention to students from diverse socioeconomic and ethnic backgrounds. Findings from the Institute of Medicine (2002) indicate that school-based prevention programs are especially important in helping minority youth who are at risk for major negative health consequences associated with substance use later in life. This is because many minority youth avoid tobacco, alcohol, and other substances not because they understand their dangers, but because they fear the negative parental sanctions that will ensue should they be caught. When these youths become independent and the threat of parental sanctions is removed, they are at greater risk for experimenting with these substances to counteract their negative mental health states, and less likely to possess alternative coping strategies.

In the 1990s, the implementation of school-based alcohol and substance abuse prevention programs increased significantly. The Centers for Disease Control and Prevention (CDC) School Health Policies and Programs Study reported that in 2000, 93 percent of all schools cover the long-term health consequences of alcohol use and addiction, and 89 percent cover the long-term consequences of illegal drug use (National Center for Chronic Disease Prevention and Health Promotion 2002). Short-term health consequences of alcohol use were covered by almost 93 percent of schools, and those of illegal drug use by almost 89 percent of schools. The impact of these programs has been limited. Rates of initiation of alcohol and substance abuse behaviors and incidence of related problems have remained fairly constant, while age of first involvement extended downward for most substances, to include children in upper elementary and middle school. The National Institute

on Alcohol Abuse and Alcoholism (NIAAA) recently concluded that the small effects associated with school-based programs demonstrate the need for more comprehensive prevention efforts (NIAAA 2000).

In its guidelines for prevention, the National Institute on Drug Abuse (NIDA) emphasizes that the primary targets in effective prevention programs are the risk and protective factors that exist in the child's family, school, and community. Prevention programs are defined in terms of their audience:

1. *Universal* programs are designed for the general population; for example, all the students in a school.
2. *Selective* programs focus on subgroups that are considered to be at risk; for example, children with academic problems, or children with substance-abusing parents.
3. *Indicated* programs address individuals who are already engaging in substance abuse. (NIDA 2003)

Universal programs emphasize strengthening protective factors. Current research-based programs accomplish this through various routes, including:

1. *The Caring School Community Program*—reinforcement of children's sense of the school community.
2. *Classroom-Centered and Family-School Partnership Intervention*—improvement of communication patterns.
3. *Guiding Good Choices*—improvement of parents' communication and disciplinary skills.
4. *Life Skills Training, Project Alert*—teaching middle school students social and resistance skills. (NIDA 2003)

Echoing the NIAAA recommendations, NIDA reports that multicomponent programs that occur in more than one setting, for example home as well as school, are generally more effective than programs in single settings. A few research-based comprehensive programs that incorporate children, parents, and teachers have been implemented, most notably: Project STAR and SOAR (Skills, Opportunity, and Recognition).

EDUCATION AND PREVENTION FOR SEXUAL BEHAVIOR, STIs, AND AIDS

The prevention issues and principles outlined by NIDA are also applicable to education about sexual behavior, STIs, and AIDS. To date, the evidence is mixed on the long-term impacts of AIDS and STI prevention efforts. It is clear, however, that more comprehensive and interactive rather than didactic approaches increase the impact of prevention programs.

Public controversy about appropriate sexual information for children of different ages, and misconceptions about HIV/AIDS, complicate education and prevention efforts. The CDC identifies comprehensive health education as an essential aspect of successful HIV/AIDS prevention. According to health educators Susan Telljohann, Cynthia Symons, and Beth Pateman (2004), misconceptions and stereotypes about HIV/AIDS have generated a misguided complacency among some groups regarding the need for universal HIV/AIDS education. Complacency among "low risk" groups, combined with the sense of invulnerability that is characteristic of adolescence, contribute to risky behavior. Telljohann, Symons, and Pateman emphasize the importance for children and adolescents of integrating information about transmission of STIs and HIV/AIDS into more broad-based considerations of sexual behavior. This point is underscored by the increasing percentage of cases of HIV transmission that occur through heterosexual contact.

Drs. Darby McElderry and Hatim Omar (2003) note that the federal government currently favors abstinence-only sex education programs. McElderry and Omar cite evidence that although such programs result in immediate reductions in sexual activity, these reductions are transitory, lasting for only a few months. Research indicates that comprehensive sex education programs that include information about contraception and STIs, as well as abstinence, result in better outcomes. While specific results vary between studies, comprehensive programs are associated with delay of intercourse, increased contraceptive use, and decreased sexual risk-taking behavior.

McElderry and Omar's findings also highlight the importance of the individual presenting the sex education program. Adolescents reported that the

sex education instructor often was someone with whom they did not feel comfortable discussing sexual issues. Although learning of factual material about AIDS was not affected by the rapport between students and teacher, discussion of sexual behavior was.

IMPROVING THE EFFECTIVENESS OF HEALTH EDUCATION AND PREVENTION

Dr. David Schonfeld (2000) notes that many teachers and principals are reluctant to discuss risky behaviors, especially sexual activity, with students. Their reluctance stems in part from concern about parental reactions, as well as from their own feelings about these issues. Most teachers receive very little, if any, preparation for addressing these sensitive issues in their classrooms. This is unfortunate since the majority of school districts rely on classroom teachers to implement prevention programs. The lack of teacher preparation for this task is particularly significant because teacher attitudes toward adoption and implementation of these programs have been shown to impact their effectiveness. Phyllis Levinson-Gingiss and Rita Hamilton (1989) found that teachers who perceive limited responsibility for student outcomes in prevention, and are not comfortable using interactive teaching techniques or teaching the content of the prevention curriculum, are less likely to implement the program thoughtfully, if at all.

Beyond strengthening the commitment of teachers to delivering the message, though, it is important to ensure that the message itself addresses the concerns and life circumstances of the target audience

and offers them constructive strategies for handling high-risk situations. M. Newcomb and P. Bentler (1989) report that telling children and adolescents that a behavior such as smoking, drinking, or sex will be acceptable when they are older suggests that these behaviors are indicators of maturity. In this way, the behaviors become more attractive. In addition, the Office of Substance Abuse Prevention found that while messages about the negative effects of high-risk behaviors varied, according to the individual's level of sensation seeking most children and adolescents chose to avoid behavior that was linked to negative consequences. However, the response of those who were high in sensation seeking was that "Anything that sounds really bad must be good" (OSAP 1991, 65).

At the beginning of the twenty-first century, America's children face serious challenges to their health and well being. For the most part, these challenges are preventable. The findings reported here indicate that simply providing information is not an effective deterrent of risky behavior. Young adolescents do not usually pause to deliberately weigh the pros and cons before deciding to drink beer, smoke marijuana, or engage in sexual activity. These decisions are made in social contexts in which the negative social consequences of saying no may be at least as salient as the potential health hazards of saying yes. Prevention researchers and educators have the opportunity to use what has been learned about children's understanding of health issues and risky behavior, and about how children learn, to improve the quality of outcomes for all children.

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VI

PEOPLE

PEOPLE

In this section, we present a thorough examination of twenty-five eminent figures in education and human development. The assignment of selecting the “most eminent” individuals who impacted the fields of education and human development was by no means an easy task. Indeed, there is no magic formula or quantitative methodology that will determine who is “most eminent”; and this rule of thumb holds for the meaning of “eminence” in any field or discipline, not merely in education and human development. As the editors, we are fully aware that the list of eminent individuals in the field of education goes well beyond twenty-five. In fact, our original list surpassed the “one hundred” mark. However, with length and time limitations in mind, we needed to make some important decisions with regard to the individuals we were to include. Moreover, we had no intention to make mere mention of a hundred or more individuals of, say, 100 or so words each; that would do more of a disservice to each of the individuals than not including some of them at all. Rather, we wanted to include full-length entries (of approximately 1,000 words or more), in which each individual’s life and work are examined in detail. At the same time, we are delighted to have identified several hundred renowned individuals—not included in this section—to be discussed in nearly all of the twenty-nine chapters in Part I of this encyclopedia.

So, how did we determine “eminent” individuals in education? To begin with, we asked a number of our colleagues to identify who they think to be the five “most eminent” individuals in education. Next, we determined how many times a particular figure was mentioned by each of our colleagues. It became evident that some figures focused their attention to educational practice, other figures were devoted to developing theoretical frameworks, and a third group of a more radi-

cal nature were interested in transforming dominant bureaucratic, and often times racist and sexist educational systems. Clearly, names like Paulo Freire, Maria Montessori, Jean Piaget, Jean-Jacques Rousseau, and Lev Vygotsky were mentioned most frequently.

Despite their eminence, the educational thinkers discussed in this section demonstrated, for the most part, both strengths and weaknesses in their output. Although we highlight all their contributions to education and human development, we also draw clear attention to the flaws in each thinker’s philosophical, theoretical, or practitioner-based framework. For example, despite limited primary sources, we have some knowledge of Aristotle’s views on education; he strongly believed that the pursuit of education is a *sine qua non* activity in order for one to achieve the good life—that is, to flourish and engage in skills that strengthen the mind, body, and soul. At the same time, Aristotle did not believe that girls and women should receive formal education (Everson 1996). As another example, for decades, William Kilpatrick’s work on the Project Method served as a foundational model in schools. However, critics of Kilpatrick’s method argued that he overwhelmingly emphasized trait and character at the expense of cognitive development and general content knowledge (Beyer 1997).

It is evident from the biographies that being human renders a variety of attributes such as intellect, creativity, perseverance, and charisma—some or all of which can be identified in the twenty-five selected individuals. The transformation of a field of study and the creation of a revolution in thought and practice are never easy. History often demonstrates that one’s influence may not be recognized until posterity. We have identified four generalizations that support this notion. First, there must be a societal readiness for change as a means of accep-

tance of one's work or ideas. Second, there needs to be some type of mass distribution of an individual's work. The work must not only be translated into a variety of languages, but must be adapted to a common vernacular for the general public. Third, there needs to be some recognition of the work and general debate of its premises. Finally, good theories and practices are formative in nature and evolve under a variety of conditions. We believe that the twenty-five people who were selected for this section have transformed thought and practice in their related interests in the fields of education and human development.

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PETER ABELARD

Peter Abelard (1079–1142) is perhaps the best known educator in the medieval era that embraced scholasticism as a method of teaching. Scholastic educators applied classic philosophical approaches—including Platonism, Aristotelianism, Skepticism, Epicureanism, and Stoicism—to theology that were to eventually become the method of discourse in the earliest universities. The contributions of Abelard are important for several reasons. To begin with, he was not only a teacher, but also one of the first teachers to train individuals in the teaching profession. Second, he introduced the teaching methods associated with scholastic education. Third, his evidently stimulating and poignant delivery and style as a teacher is said to have been incomparable to his contemporaries. He drew throngs of students wherever he taught (Copleston 1962). Fourth, Abelard's achievements are contrasted with his difficulties in pedagogical practice. Moreover, these difficulties nearly one thousand years ago are similar to the problems that remain to the present day. And fifth, Abelard identified

cognitive development as a higher level of thinking to basic fact and concept mastery.

HISTORICAL BACKGROUND

Abelard was born in 1079 in the community of Le Pallet, France, not far from Nantes. At about the turn of the century (1100) he traveled to Paris, where he studied under the tutelage of William of Champeaux at the school of Notre Dame. Perhaps William's most outspoken critic, Abelard criticized his master's realist philosophy. Abelard eventually became a master at the school of Notre Dame and, in 1112, he taught at the school of Mont-Ste-Geneviève, not far from Paris. Abelard's fame as a dialectician attracted great numbers of students to Paris. Unlike several well-known educational thinkers before and after him, Abelard lived during his fame. Abelard's recognition, however, did not come until he was thirty-seven years of age in 1116. However, his fame was soon cut short.

After his romance with Heloise, with whom he bore a son, his relationship with a number of his colleagues became bitter, to the point that his reputation was diminished. Believing that Abelard would leave her and her son, Heloise's uncle sent a band of men after him. Abelard then sought refuge as a monk at Saint-Denis, where he remained until 1120. Finding that the monks at Saint-Denis would not accept him, Abelard created a hermitage near Troyes. In Troyes, Abelard built the monastery, the so-called Paraclete, where students would stay to study with him. Abelard gave the Paraclete to Heloise when he became abbot of Saint-Gildas-en-Rhuys, Brittany. Once again, in 1140, Abelard was condemned by the Council of Sens for allegedly having a negative influence on youth. He subsequently retired to Cluny. When he died in 1149, he was buried at the Paraclete. Later his body, along with Heloise (who died in 1164), was transported to Père-Lachaise in Paris. The events in Abelard's life are well documented, partly due to the fact that he himself wrote an autobiography, *Historia Calamitatum* (1974). Abelard was perhaps most important as a teacher. Some of his most celebrated pupils include John of Salisbury and Arnold of Brescia. In addition to his treatises on philosophy and education, Abelard also was an established poet. Although a prolific poet, only Latin hymns have survived.

CONTROVERSY BETWEEN RELIGION AND PHILOSOPHICAL INQUIRY AND LEARNING

As a result of a revival of the works of Aristotle, Abelard espoused a Aristotelian dialectic approach. This approach considered the overarching idea that the methods of logic are universal and are perhaps the *sine qua non* element for nonsectarian philosophical inquiry and human thought. Abelard, however, was one of the first individuals that believed Aristotelian dialectic could be applied to the universals of faith. This view was in radical opposition to the mystical views of St. Bernard, the ultra realist views of William of Champeaux, and the universalistic views of Roscelin. Abelard, however, attempted to ground universals as entities existing only in the abstract, yet with a basis in particulars. He referred to this as moderate realism. Although he was unsuccessful in reconciling the philosophy of Aristotle and methods of logic with faith, Abelard's ideas influenced a number of philosophers after him, particularly St. Thomas Aquinas approximately a century later.

Perhaps Abelard's most influential work was *Sic et Non* (Yea and Nay), in which he devised 158 questions about the Trinity, the idea of redemption, and the sacraments. In his introduction to *Sic et Non*, Abelard set a method of resolving the apparent contradictions between the church and the academy, thereby making the work significant for the development of the scholastic method. One important contribution to philosophy and education that Abelard presents is his method, which was employed in the teachings and treatises of a number of his predecessors, including Alexander of Hales and St. Thomas Aquinas. With the 158 questions, Abelard placed a column on one side that indicated an affirmative answer to a question and a column on the other side of each question that indicated a negative answer. In general, Abelard wished to place before the student the reasons for and against the principle that truth is to be attained only by a dialectical discussion of apparently contradictory arguments and authorities. In the problem concerning universals, a topic that occupied a large number of dialecticians in those days, Abelard reproached what he referred to as crude nominalism of Roscelin on the one hand, and the flagrant realism of his former

mentor William of Champeaux on the other. It is not entirely clear, however, what Abelard's position really was with any accuracy. However, from the statements of his pupil, John of Salisbury, it is clear that Abelard's doctrine, while expressed in terms of a modified Nominalism, was very similar to the moderate Realism that began to be official in the schools about half a century after Abelard's death. This work formed the basis for the widely read *Sentences* of Peter Lombard, who may have been Abelard's pupil.

Abelard's genius was his ability to combine Platonic forms or essences with Aristotelian logic and with cognitive inquiry (Nominalism). To be sure, he posited that universals presuppose actual things (in the Platonic realm) and they are in such things as their discernible likenesses (as Aristotelians would maintain). He also argued that universals exist even after the objects they represent are no longer in sight or are no longer existing. This is evidenced, according to Abelard, in the cognitive domain—in other words, the learner becomes acquainted with something by name or in an abstract way. The cognitive argument—that the learner knows through thinking—is an essential component to the learning process.

LATER INFLUENCE

Disgrace and humiliation aside, Abelard still managed to attract a multitude of students, many of whom became prominent figures. Before his death in 1142, Abelard attracted students from all areas of Europe. Hastings Rashdall (1936) states that twenty of Abelard's pupils became cardinals and fifty became bishops. Abelard's contributions to education influence contemporary practices in a number of ways. First, although he attempted to reconcile the distinction between human thought and inquiry (i.e., philosophy) and Christian faith, he insisted that in order to prevent dogmatic practices from prevailing in dispute and debate, it is necessary to development human knowledge through the methods of logic. Abelard's support for his ideas was the philosophical works of Aristotle. Next, he is one of the first individuals whose professional responsibilities dealt with the art and science of pedagogy. Abelard not only was deeply familiar with teach-

ing style, but also was a teacher who motivated his students to a great extent.

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MARY AINSWORTH

Mary Ainsworth (1913–1999) is commonly referred to as one of the pioneers in the theory of attachment. Prior to Ainsworth, theorists such as John Bowlby and James Robertson contributed a great deal to our understanding of attachment as it pertained to institutional separation (e.g., separation from parents of a child who might be hospitalized). However, Ainsworth is perhaps one of the first researchers to investigate the effects of different forms of childrearing on attachment behaviors. Her primary interest was to examine infants' behavior when present with their mothers—a secure base for them from about eight months—and when left with a stranger for a few minutes. Her subjects include parent-child relations in different parts of the world and from a variety of social settings.

BACKGROUND

Ainsworth was born in Glendale, Ohio. At the age of twenty-six, she received her Ph.D. from the University of Toronto. Ainsworth served in the Canadian Army during World War II, and rose to the level of major. Prior to 1950, Ainsworth worked primarily alone. In 1950, however, she and John Bowlby exchanged ideas and influences on each other's theory. Throughout the remainder of her life, Ainsworth

repeatedly reconnected with Bowlby to further develop theoretical ideas and share data. After World War II, Ainsworth traveled to Uganda with her husband, where she conducted numerous studies on mother-child interactions. There she discovered different patterns of attachment, which contributed to her general theory on the subject.

In 1956, Ainsworth went to Johns Hopkins University where she had conducted an intensive investigation of mothers and children in Baltimore County, Maryland. She found that the parent-child classifications that were evident among Ugandans applied to American mothers and children as well. In 1976, Ainsworth became a faculty member of the University of Virginia, and eventually retired there. Her later research investigated attachment beyond infancy and into adulthood.

ATTACHMENT THEORY

Ainsworth's key ideas were born during her time at the University of Toronto under the guidance of William Blatz, who developed a theory of the role of security in humans. Ainsworth developed her idea of a secure base in infant attachments on Blatz's framework. She argued that having a strong attachment provided the child not with a dependent and helpless relationship to the parent, but a sense of security as a base. From this secure base, the child could then explore, take risks, and in fact, behave more independently rather than being dependent and helpless. This view is compatible with Erikson's view of autonomy as an outcome of a foundation of trust. Ainsworth argued that one could never be too securely attached because attachment continues to be adaptive throughout one's life, while dependence is not.

As a means of assessing the type of attachment that had formed between a parent and a child, Ainsworth developed a technique she coined the "strange situation task." This task consists of a series of events for the infant and parent, usually the mother. The infant is first placed in a room with the mother alone. In one phase, the mother leaves the infant alone. In another phase, the mother returns. In another, a stranger enters. In another, the mother and stranger are both present with the infant. The task presents several chances to observe the infant's reactions to separation from the mother, to a stranger,

and to reunions with the mother. Certain patterns of distress shown by infants on separation from their mothers and on encountering strangers were observed. Most important, certain patterns of reactions of the infant to reunion with the mother were also observed.

Based on extensive research, Ainsworth classified the patterns found during the strange situation task into three main types of infant attachment: Type A—insecure-avoidant attachment; Type B—secure attachment; and Type C—anxious-ambivalent (insecure-ambivalent) attachment or resistant attachment. In the Type A pattern (Insecure-avoidant attachment), the infant seems to ignore the mother, to show minimal distress when she leaves, and avoid her upon reunion. The infant seems to be detached from the mother. In the Type B pattern (secure attachment), the infant shows distress when the mother leaves and seeks her proximity, affection, and contact when she returns. The infant shares feelings easily and is easily comforted by the mother. Most children show this type. In Type C, the anxious-ambivalent attachment (also referred to as insecure-ambivalent, or resistant attachment), the infant seems to be ambivalent and inconsistent in his or her distress and reunion responses. Upon reunion with the mother, the infant often moves toward the mother, then away from her; the infant sometimes acts as if he or she is attempting to punish the mother.

Based on the results of the strange situation task, Ainsworth, among other researchers, concluded that its classifications predict children's future patterns of attachment. Children who possess secure types of attachments generally form close bonds with peers in the early childhood years. Those who demonstrate insecure types of attachment are more likely to have problems in preschool or elementary school related to poor behavior. Those who possess avoidant forms of attachment will more than likely exhibit various types of mood disorders and possibly depression. According to Ainsworth, attachment is evident at some point during infancy, and that behavior problems arise as a result of insecure attachments with the mother. Insecure attachments are likely the result of inconsistent or mixed-signal interactions between the parent and the child.

Ainsworth's groundbreaking work had a great deal of influence on subsequent researchers. For example, research emanating from Ainsworth's theory includes

results that show how infants whose mothers do not respond in any way to their children (stone faced mothers) attempt to avoid their mothers. Other subsequent research includes the attachments of pre-term infants. Infants who are pre-term are generally at greater risk in developing secure attachments with their parents. Signs of insecure attachments, especially with insecure infants and young children, include delays in demonstration of release mechanisms, such as smiling, laughing, or making eye contact. In addition, their responses are generally less stable and predictable than young children with secure attachments. Another factor that may contribute to insecure attachments has to do with pre-term infants who are hospitalized for long periods. In this case, the parents may be separated from the child for significant amounts of time. Thus, pre-term children can form insecure attachments, and parents may have a more difficult time forming secure attachments.

AINSWORTH'S CONTRIBUTIONS TO EDUCATION AND HUMAN DEVELOPMENT

Ainsworth's contributions to psychology have influenced education and human development in that her theoretical positions have led individuals to be able to predict future behavior of children. One case in point is day care. One argument can be made in favor of day care in that it provides a supportive environment for young children from low-income households. A similar line of argument can be made in support of mothers who wish to pursue their careers. However, Ainsworth would most likely question this position by arguing that very young children who are placed in day-care facilities run the risk of losing secure attachments with their parents (or parent—usually the mother). Current research seems to indicate that the extent to which the bond between young child and mother deteriorates is not significant. Only about 7 percent of the young children who are raised in day care run the risk of insecure attachment. Related studies have indicated that there is no negative effect at all when the caregivers are of high quality. But this poses a problem for low-income households, where affordable and high-quality day care is difficult to find.

Like most theorists, Ainsworth too has had her share of critics. Jerome Kagan, for example, has ar-

gued that Ainsworth ignores possible innate characteristics of the child that might make her avoidant of her mother. More recent studies, which seem to argue in favor of both Ainsworth's position and those of her critics, indicate that children's emotional development is influenced in part by the parents and also possibly some innate characteristic of the child.

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ALCUIN

Alcuin (c.735–c.800) was an eminent medieval educator. He was born about 735 in northeastern England near York. He played a singular role in the Carolingian revival of learning on the European continent after nearly four centuries of disorder in the educational systems. Alcuin's influence as a teacher and stimulant to the intellectual life of his times was especially great because of his talents. It was also great due to his life as a teacher in many lands, for example, at Tours and at Aachen in Gaul. Alcuin held the office of Scholasticus in the Cathedral school at York when he was invited by Charles I, king of the Franks—henceforth, Charlemagne—in 782 to assume charge of the palace school at Aachen.

ALCUIN'S LIFE AND CONTRIBUTIONS TO EDUCATION

The decline of church and state had been pervasive in Gaul. Despite differences in ethnicities, customs, institutions, and language, all its inhabitants under

Charles's rule professed common goals, and the Church, then, would serve as the common institution for instructing the populace. Since the beginning of his reign, Charlemagne had wanted to raise the educational level of his subjects and the overall improvement and progress of intellectual life throughout the land (Duckett 1951). With the exception of the clergy and the monasteries, there were no institutions that could promote Charlemagne's plan. The first task, then, was to reform church discipline and to improve the educational preparation of the clergy. These tasks were assigned to Alcuin.

The main purpose of the palace school of the Frankish kings prior to the time of Charlemagne was to train court attendants in proper manners, but the boundless energy and intellectual curiosity of Charlemagne, coupled with his sense of mission in spreading religion and knowledge throughout his kingdom, changed all that (Sharpes 2001). During Charlemagne's reign, few priests knew Latin and even fewer knew Greek; this, according to Charlemagne, put the role of the Church in danger. Nonetheless, Charlemagne was devoted to the value of education, not merely for the upper classes, but for the masses as well. He searched throughout Europe for a Latin and Greek speaking scholar. In 782, Charlemagne found Alcuin, and brought the teacher from York to educate himself, his family, and court, and through the clergy, the entirety of his kingdom to ensure that the threat of pagan gods might be banished.

Alcuin and his fellow teachers were asked to teach a diverse crowd of students at the palace school. At times, all members of the immediate royal family were present, together with other family members (uncles, aunts, cousins, and so forth). It was difficult to distinguish the court life from the school operation because the personnel of court and school were nearly identical. The physical maturity and social status of most of the students, together with the heterogeneous nature of the classes, was undoubtedly responsible for the rather relaxed atmosphere that prevailed in the classroom. Nevertheless, Alcuin viewed each member with great affection and served as counselor and confidante.

ALCUIN'S PEDAGOGICAL STYLE

Alcuin used clever teaching devices as a means of creating a conducive learning environment at the

palace school. In a document entitled *Problems for Sharpening the Wits of Youth*, credited to Alcuin, fifty-three puzzles are provided with methods of calculation for each. The following is one of Alcuin's puzzles:

A ladder has 100 steps. On the first sits one bird, on the second two birds, on the third three, and so on up to the one hundredth step. How many birds are there in all?

Legend has it that as a boy, the mathematical genius Carl Friedrich Gauss was asked to find the sum of the sequence 1, 2, 3, . . . 98, 99, 100 as a penalty for a misdeed. The tutor was astonished when the boy answered so quickly. Alcuin, over one thousand years earlier, used a similar method where he considered all the pairs of numbers between 1 and 100 that added to 100 (1+99, 2+98, 3+97, . . . 48+52, and 49+51). Since there are 49 such pairs, one simply can multiply 49 by 100 and add the leftover numbers that were not included in the pairs—namely 50 and 100—resulting in a total of 5050.

Alcuin was particularly talented as a teacher in that (given his prowess in instructing relatively well-prepared boys in the strict atmosphere of the school at York) he was able to make numerous adjustments in order to teach the mature and influential but largely boorish court members. Alcuin is sometimes referred to as one of the first teachers of adult literacy or adult education. Numerous palace students, realizing their roles in the economic and social life of the country were already firmly established, had neither desire nor opportunity to become scholars, but were satisfied to acquire the most elementary attribute of culture at the time—proficiency in Latin.

Based on his writings in education, Alcuin did not develop novel ideas; instead he compiled a great deal of compendia for the purpose and use of exercise and drill. His most significant contribution, however, was as a pedagogue. In surviving letters, Alcuin is described in terms of affection and grateful admiration (Allott 1988). Alcuin's great challenge as a teacher was to educate a large number of individuals in a most diverse setting. He was asked to teach elementary knowledge to adult students who lacked formal educational experience. Alcuin's experiences during the Carolingian period still rings true today; the American educational system, as well as those of other countries, clearly include huge populations that are deprived from an economic standpoint.

One of Alcuin's shortcomings was that, in his teachings, he did not employ instructional methods and the arts of rhetoric that were so much a part of the Greek and Roman periods more than seven to eleven centuries earlier. Perhaps the zeitgeist of the Carolingian period and the early medieval era in general was partially to account for this. However, Alcuin's goals in bringing learning to the Franks and his technique of complementing drill and practice with riddles and other challenges to the students' creativity should not be overlooked. While the students may have recognized the elementary character of much of what they did, Alcuin gave them a sense of intellect by encouraging them to compose poetry, answer riddles, and solve puzzles.

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ARISTOTLE

Aristotle (384–322 B.C.E.), a student in Plato's Academy, is considered by many philosophers to be one of the greatest thinkers in the field of philosophy. One primary reason for this has to do with his rich corpus of contributions to the development of numerous fields in the scientific, artistic, literary, and ethical realms. In addition to these contributions, Aristotle's prolific output covered the three major domains of philosophical inquiry: the problem of knowledge (what it means to know anything); the problem of conduct (what it means to be virtuous); and the problem of governance (what it means to lead and be led). Philosophers also seem to concur that Aristotle's work serves as the bedrock of modern social and physical science disciplines (e.g., psychology, political science, biology, and physics). He also emphasized the importance of education through the questioning of the meaning of knowledge. Although Aristotle's work impacted a wide range of

subject areas, only about 20 percent of his written work has survived. Moreover, a good part of the extant writings of Aristotle is in the form of lectures and note-taking material. Jonathan Barnes's edition (1982) of Aristotle's complete works is an excellent compendium of what is known to exist in written form.

HISTORICAL BACKGROUND

Aristotle was born in Stagira, a Greek colony and seaport on the coast of Thrace, in the area known as Macedon. The son of Nichomachus, the court physician to the Macedonian royal family, Aristotle was initially trained in medicine; however, in his mid-teen years, Aristotle left Stagira for Athens, and entered Plato's Academy at the age of 17. Aristotle left the academy shortly after Plato's death in 347 B.C.E., and went to Assos and Lesbos. It was in these regions that Aristotle collected a great deal of data in the areas of physical and life sciences. Shortly thereafter, in 342 B.C.E., he was invited to the court of Philip of Macedon, where he tutored Alexander the Great. In 335 B.C.E., Aristotle returned to Athens, where he founded the Lyceum, an institution that admitted students who wished to pursue study in a newly founded discipline in the arts or sciences. The institution's mission was that of a university—research was pursued as an extension of higher education. Courses for enrolled students were usually held in the morning. In the afternoons and evenings, the Lyceum served the general public as an open university.

Upon a sequence of Macedonian victories led by Alexander, Macedonian-born Athenian civilians, like Aristotle, fell into disrepute with the Athenian military. Realizing the destiny of Socrates nearly eighty years earlier, Aristotle fled Athens for the island of Euboea in 323 B.C.E. to avoid a possible trial and perhaps a death sentence. In Euboea, Aristotle retired in the town of Chalcis where he lived in the house that had once belonged to his mother and was still retained by the family. He died there in the following year, most likely from a stomach ailment at the age of sixty-two.

ARISTOTLE ON EDUCATION

Unlike Plato's dialogues, which alluded to knowledge through education and learning, Aristotle's

work on the subject of education is fragmented. The majority of Aristotle's output comes to us in the form of treatises. These treatises consist of both notes from his lectures and notes from his observations in the field. After the fall of the Roman Empire toward the end of the sixth century, there seems to have been a lack of interest in Aristotle's work along with the work of other classical Greek thinkers. It was not until the end of the ninth century that Muslim thinkers revived interest in Aristotelian philosophy.

Although only fragments of his work *On Education* exist, we have some understanding of his ideas on education from surviving works. In essence, Aristotle believed that education was the crucial key to becoming a flourishing individual. The following are elements of his thought that continue to play an important part in his philosophical agenda on education.

First, his work is a testament to the belief that our thinking and practice as educators must be infused with a clear philosophy of life. There has to be a deep concern for the ethical and political. For Aristotle, the best life is lived by one who flourishes in his or her endeavors. Accordingly, one must be conscientious with regard to what is good in terms of both intellect and virtue, not merely what is correct. The second element has to do with a broad curriculum. Aristotle underscored the necessity of an extensive program of study. Rhetoric, mathematics, physical development, musicianship, and the sciences (among other subjects) were equally important in strengthening the body as well as the mind. Next, education for Aristotle meant that the individual should be engaged in both contemplative (psyche) and practical wisdom (phronesis). Clearly an individual is capable of thinking methodically and with wisdom. However, practical wisdom is achieved when the individual is actively engaged in a particular activity. As Aristotle argues, "Anything that we have to learn to do we learn by the actual doing of it. . . . We become just by doing just acts, temperate by doing temperate ones, brave by doing brave ones" (Aristotle 1972, Book II, 91).

Unlike Plato's dialogues, Aristotle's work does not elaborate in great detail on issues in education. The most pervasive discussion on the subject is in

his treatise entitled *The Politics*, particularly in Books 7 and 8 (1981). Of the little that remains of Aristotle's corpus, we know that his explicit remarks on the goals and objectives of education convey education as a practical—not theoretical—endeavor because it is a means by which individuals can pursue a good and happy life—the ends. Education is also a skill in that the process of teaching and learning is something that people not only pursue, but also engage in the act of making. People engage in labor and use their skills and crafts in order to “make” something happen.

ARISTOTLE ON PEDAGOGY AND LEARNING

Aristotle's ethical treatises are based on the concepts of happiness, the mean, leisure, and wisdom. These concepts are also encountered in his discussions on education. For Aristotle, all forms of education should focus on the mean. The last of the eight books of *The Politics* ends with a discussion of these concepts. Aristotle says, “Clearly, then, there are three standards to which musical education should conform. They are the mean, the possible, and the proper.” The concept of the mean does not only apply to the ends of education; it is also an instrumental component, a pedagogical imperative. Although Aristotle makes reference to music, his point is this: Education should be based on good sense; that is, extremes are to be avoided. Music education should be based less on technical ability and more on listening. Physical education should not be based on producing top athletes; rather, it should be based on engaging the individual in physical training for the purpose of improving health and well being and even the soul.

With regard to pedagogy and learning, Aristotle also made reference to two harmonizing, and corresponding, educational categories: education as a form of habit and education as a form of reason. Aristotle argues that education through habit does not mean that someone is engaged in mindless repetition of a distinct task or group of tasks. Rather, habit involves what we refer to today as “active learning.” In order to produce a consistent behavior, assuming that this behavior is virtuous—for the good of all humanity—we must engage in habit;

that is, we learn how to do something before we are able to do it. And, in order to learn how to do something, we create a good habit through repetition and practice. So a person becomes a flutist by playing the flute, an architect by creating and designing models of structures, and so forth. So, education in the form of habit is founded for the most part on experience.

In contrast, yet at the same time complementary to habit, education as a form of reason deals with universal principles. For Aristotle, this form of education is the primary basis for all knowledge. It is based on universals. That is, while learning through habit employs the role of experience in learning, it focuses primarily on specificities and particulars. For example, one may be adept in speaking and writing in a particular language. But can this individual identify and appreciate the general principles, rules, and concepts, of the grammar that accounts for the systematic structures of numerous languages? Without education for reason, engaging in scientific inquiry would be futile because hypothesis testing and experimentation must be conducted systematically and be based on evidence for support. In short, the purpose of educating for reason is to search for an understanding of the causes of things, not merely the disposition. Aristotle then distinguishes between two methods of educating for reason: learning by induction (epagoge) and learning through demonstration. Epagoge is a manner in which the individual initially learns from experience and then moves toward knowledge and the abstract; the individual identifies how several things in a particular category behave and subsequently generalizes about all things in the same category. Learning through demonstration, however, differs from epagoge because it involves universal principles and generalities for the purpose of instruction.

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BENJAMIN BLOOM

Benjamin Bloom (1913–1999) was an eminent American educational theorist, perhaps best known for his development of frequently cited taxonomy of learning objectives. Bloom's contributions to education influenced numerous present-day cognitive researchers and educational practitioners. His research in improving education was based on the following issues: (1) the influence of innate ability on human cognitive traits like intelligence and determination and the extent to which these traits can be influenced by experience; (2) the types of educational objectives that can be employed in the classroom setting; (3) the possibility of obtaining similar cognitive results in a full classroom of students as one would in one-on-one tutoring; and (4) the ways in which certain individuals reach the highest levels of achievement in their fields.

HISTORICAL BACKGROUND

Born in Lansford, Pennsylvania, in 1913, Bloom was the son of Russian immigrants who made their living as picture framers. Bloom was an excellent student in his formative years, and graduated as valedictorian of his high school class. He then went on to receive his baccalaureate and master's degrees from Pennsylvania State University, where he completed both degrees in four years. After college, Bloom was hired as a researcher by the Pennsylvania State Relief Organization. After a few years, he worked for the American Youth Commission (AYC). It was at AYC where he met his future mentor, Ralph Tyler, who was a professor of curriculum studies at the University of Chicago. Through Tyler's recommendations, Bloom entered the doctoral program at the University of Chicago, and completed a Ph.D. in Education in 1942. During his graduate study in Chicago, Bloom worked for the Board of Examinations, and remained with the organization until 1959. It was at the Board, which was initially under Tyler's supervision, that Bloom organized a conference around the topic of identifying levels of learning outcomes frequently encountered by teachers and examiners. In 1948, Bloom invited college and university personnel throughout the country for this conference. As a result, Bloom spent the next eight

years on his well-known *Taxonomy of Educational Objectives* (1956).

Bloom's contributions to education during his time with the Board of Examinations were mainly publications on testing, measurement, and assessment. In 1959, however, Bloom spent approximately two years at the Center for Advanced Study in Behavioral Sciences at Stanford University where he completed his study on the effects of the environment on human cognition and published a book entitled *Stability and Change in Human Characteristics* (1964). In 1960, he returned to the University of Chicago and remained there for the majority of his career. At Chicago, he moved through the ranks from Instructor in 1944 to Charles H. Swift Distinguished Service Professor in 1970. In the 1960s, Bloom's work was referenced frequently in Lyndon B. Johnson's administration as a means of support for a number of educational programs. One in particular was the Head Start program for preschool children. A large part of his research and publications during the late 1960s and 1970s had to do with the extent to which students can master subject matter knowledge. His later works consisted mostly of works having to do with creativity and the means by which certain individuals—like well-known musicians, artists, mathematicians, and the like—have attained their achievement and success. Bloom died in 1999.

COGNITIVE TAXONOMY

The *Taxonomy of Educational Objectives* (Bloom and Krathwohl 1956) served as a springboard for Bloom's career as a preeminent leader in the field of curriculum and assessment in education. This work has been referenced in nearly every study having to do with student learning and assessment and is a staple in most curriculum, instruction, and assessment courses in schools of education for the past fifty years.

As Eisner (2000) points out, Bloom's taxonomy is not simply a classification of cognitive levels. Nor is it a system of categorizing stages of development, for it is not stage dependent like Jean Piaget's theory of intellectual development. Rather, Bloom wanted to demonstrate that reaching any subsequent level is dependent on one's ability to master the preceding levels. Evaluation—the highest level in the taxonomy—means that

Table 30.1 Benjamin Bloom's Cognitive Taxonomy of Educational Objectives

Higher-Order Objectives			
Level	Structure of Content	Process Skills	Example
Evaluation	Judgment, Appraisal	Judging, Assessing	An individual weighs the evidence supporting two separate arguments to determine the strengths and weaknesses of each.
Synthesis	Composition, Creation	Developing, Creating	An individual composes music for piano and string orchestra.
Analysis	Examination, Investigation	Comparing, Contrasting	An individual dissects two different organisms to compare the respiratory system of each.



Lower-Order Objectives			
Level	Structure of Content	Process Skills	Example
Application	Emulation, Simulation	Modeling, Simulating	An individual demonstrates the transition of a solid into a gas by using dry ice (CO ₂).
Comprehension	Description, Explanation	Defining, Explaining	An individual explains the commutative principle for addition and multiplication of integers.
Knowledge	Facts, Labels, Indicators	Labeling, Identifying	An individual identifies the parts of speech for each word of a sentence.

Source: Stephen Farenga and Daniel Ness. Adapted from Benjamin Bloom and D. Krathwohl, *Taxonomy of Educational Objectives: Handbook I, The Cognitive Domain*. New York: David McKay and Company, 1956.

an individual is able to judge and make prudent decisions on selecting appropriate ideas or systems of knowledge within a particular subject area. For one to be able to reach the level of evaluation, that individual must be able to create or synthesize disparate concepts, facts, ideas, or symbol systems. Moreover, in order to reach the level of synthesis, one must be able to analyze—that is, compare and contrast—the parts of a given whole concept or idea. Next, in order to reach analysis, one

must be able to apply a given concept to a particular context or situation. And in order to reach the application level, one must be able to understand the ideas behind a given concept. Finally, at the bare minimum, one must have the ability to name or identify various pieces of information. Table 30.1 identifies the six levels of Bloom's taxonomy, along with each of their meanings and an example of an individual reaching a particular cognitive level.

STUDENT SUCCESS AND LEARNING FOR MASTERY

Bloom's work during his hiatus at Stanford University proved to be significant, and his book *Stability and Change in Human Characteristics* (1964) turned out to be another landmark publication. In this book, Bloom argues that at around the second grade one can predict what a student's cognitive and academic level will be once that individual reaches adolescence. Further, his reliability index turned out to be quite precise (namely, 0.8, or 80 percent accuracy). In general, Bloom concluded that cognitive achievement as a result of one's physical environment diminishes over time. Nevertheless, he did not consider genetic determinism to be the cause of this stability in an individual's academic performance. Rather, he strongly embraced the idea that through effective teaching and curriculum development, cognitive levels can actually increase. At the same time, Bloom did not believe that the rate in which one completes a cognitive task has any value with regard to achievement. Instead, educational institutions must pay more attention to specific benchmarks in student learning.

In his well-known coauthored book, *Developing Talent in Young People* (Bloom and Sosniak 1985), Bloom demonstrated that although the influence of physical environment may decrease over time, it is a major factor in student achievement and high-achieving adults. More than likely, individuals who have become well-known writers, artists, mathematicians, athletes, and the like did not begin their careers as child prodigies. Nevertheless, the attention that these individuals have received in their formative years, according to Bloom, will have played an important part in their success as adults. High achievement, then, is the result of learning through both environmental factors like parental attention and individual effort, and not simply genetics alone.

Bloom also researched the extent to which whole-class instruction would have the potential to match the benefits of one-on-one instruction. In his article "The 2 Sigma Problem: The Search for Methods of Group Instruction as Effective as One-to-One Tutoring" (1984), Bloom investigated this question and arrives at the following conclusions. First, students who receive one-on-one tutoring score well above

other students (namely, two standard deviations, hence the name "2 sigma problem") who receive solely the typical whole-class instruction. In addition, it is not impossible to simulate an environment in which whole-class instruction can provide similar benefits to personalized tutoring.

ADDITIONAL CONTRIBUTIONS TO EDUCATION

Bloom's career spanned more than five decades. During that time, he was a prolific author; he authored books with several currently distinguished figures in education including George Madaus and Lauren Sosniak. He also served as an educational adviser to numerous educational organizations and national educational systems worldwide. He served as president of the American Educational Research Association (AERA) from 1965 to 1967 and was chairperson of a number of committees at the College Entrance Examination Board (College Board). Despite Bloom's influence on the improvement of student learning throughout the world, he was quite skeptical and circumspect with regard to the issue of international comparisons and the issue of standardized testing in general (Eisner 2000). For Bloom, studies on international comparisons of student learning must be dealt with carefully because often times the researchers oversimplify the comparison by comparing test scores in only particular subject areas. Bloom also argued that standardized testing did not serve the student appropriately. He believed that the educator's role was to focus on the attainment of particular objectives and goals rather than a preoccupation with a student's speed in completing an examination.

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NOAM CHOMSKY

Noam Chomsky (1928–) is perhaps best known for his work in two areas: The first is his groundbreaking work in the field of psycholinguistics, and the second is his preeminence as one of the most critical political and social analysts of our time. Although Chomsky's work has not directly focused on educational issues per se, through his research and writings he contributed immensely to what we know about the emergence of language in children and how this affects education as a field and an institution.

BACKGROUND

Chomsky's innovations in the field of linguistics changed our view of how language develops in humans. Born in 1928, Chomsky's first acquaintance with linguistics was through his father, who was a highly respected Hebrew scholar. Chomsky spent his college and graduate school years at the University of Pennsylvania where he studied with the well-known linguist Zellig Harris. He completed his B.A. and Ph.D. degrees there, but found it difficult to obtain positions in most universities because his new theory, which combined linguistics with mathematics, was seen as uncharted territory in most traditional linguistics departments. One of his only offers came from the Massachusetts Institute of Technology (MIT). He took the post in 1955 and remains there to this day.

LINGUISTIC ANALYSIS AND UNIVERSAL GRAMMAR

In 1957, Chomsky completed his book entitled *Syntactic Structures*. It is in this book that we are initially acquainted with his view on the innateness of grammatical structure. In his theory of universal grammar, Chomsky argues that one's acquisition of a language—particularly in association with the grammar of that language—is innate. It is not something

that develops, unfolds, or is reconstructed (as the developmentalists would have it), nor is it something that emerges through repetitive behavior (as the behaviorists would have it).

Before Chomsky's theory became known to the intellectual community, most theorists, researchers, and educators believed in the so-called storage bin theory. According to this theory, children begin to develop grammatical rules through imitation of adults. Through imitation, they acquire strings of sentences that they can store in their minds. And when they need to use a particular sentence, they summon the sentence from memory, and use it.

Chomsky shows through his theoretical work that this storage bin model of grammatical development is flawed. If it were true, according to Chomsky, humans would have very limited language abilities; they would simply summon sentences from memory, and at the same time, would have great difficulty in communicating to others who use structures that are novel. This is because the perpetual retrieval of previously stored sentence structures would not allow us to understand sentences that we have never heard before. When we write stories, novels, essays, or even research articles, we don't resort to a set number of grammatical structures; instead, although we often use the same words over and over, we create new sentences (hence, new ideas) each time. For Chomsky, we have internal rules that guide us to have the ability to do this.

According to Chomsky, it is difficult to explain the development of grammar through inputs from the external environment because the child's linguistic achievements over short periods of time are too great. How is it possible to explain the fact that children, on the whole, are acquainted with only a limited body of grammatical structure but are able to master somewhat complex grammatical structures beyond that of what they experience? Chomsky's conclusion is that there is a genetic blueprint that enables humans to employ more complex forms of grammar at early ages than the forms that they are used to hearing. This is what Chomsky refers to as the "innateness hypothesis." In 1986, Chomsky proposed his most novel position on language acquisition. He proposed that children acquire language innately through the guidance of universal grammar (UG). At some point, the child will automatically recognize the form that the language spoken (almost always the so-called native language) will take.

Chomsky was a strong opponent of learning theory and the Skinnerian approach to the development of language. In no way, according to Chomsky, does language emerge from excessive baby babble, until the point when a word is uttered and “reinforced.” There is no way that one can verify that a stumbled-upon word is reinforced in the first place.

Although Chomsky’s theoretical work had a great deal in common with the work of Piaget, the former happened to be one of the latter’s most famous critics. Both Piaget and Chomsky, for example, do not believe, as the Lockeans and subsequently the behaviorists would have it, that children develop passively through external environmental agents. Rather, humans develop physically and cognitively through active and spontaneous engagement with the external environment. Chomsky’s concern with Piaget’s theory of intellectual development, however, stems from the latter’s position that cognitive development has almost everything to do with the child’s own active constructions of previously learned ideas as a means of making sense of the world. In contrast, Chomsky argues that language is wired, for the most part, in the genes of the human child. Based on a genetic plan, the child then will create grammatical structures automatically.

CHOMSKY’S POLITICAL AND SOCIAL VIEWS AND THEIR IMPACT ON EDUCATION

Chomsky made a clear mark in the field of education with his contribution to the origins of language acquisition. But Chomsky’s contributions to education go well beyond the subject of linguistics and the emergence of grammar. Chomsky is perhaps one of the most outspoken social critics of our time. His position on the current (and past and future) education system serves primarily as an example of the greater problems of society as a whole. Similar to Paulo Freire or Ivan Illich’s view of the educational system, for Chomsky, the idea of “school” as an institution for educating youth is a fallacy. Instead, schooling only serves to suppress knowledge as a free-thinking enterprise. Teachers are trained—not educated—to impose knowledge onto students. The system belittles the field of education to the point where teachers are identified not in terms of

their academic skill and knowledge in various content areas, but in terms of their level of obedience to the system. They are trained not to challenge the system. Terms like “diversity,” “for all,” and “constructing knowledge” are only used as catch phrases but are not practiced within the context of the classroom. Most teachers possess a cookie cutter mentality that only serves as a vehicle for strengthening system doctrine.

Chomsky views education as an institution whose constituents—high-level administrators and policymakers—are members of the status quo. “Leaders” in the field of education is a misnomer. For Chomsky, they do not lead at all. If anything, they serve as followers of the establishment. In the book entitled *Chomsky on Miseducation* (2004), he states, “If you’re following the party line you don’t have to document anything; you can say anything you feel like. . . . That’s one of the privileges you get for obedience. On the other hand, if you’re critical of received opinion, you have to document every phrase” (p. 173). This statement can be applied to any institution in our society, not just education. In reference to education, however, this statement is clear: If you follow the strictures of the educational system, you need not document anything; if you follow the official policy, you are free to say anything you wish, so long as what you say is not critical of the educational establishment.

Another problem with the educational establishment, according to Chomsky, is that institutions of education fail to recognize or outright ignore the genuine ills of educational achievement. Rather than focusing on the negative influences of the home environment, such as poverty, poor health care, unsanitary conditions, and poor nutrition, education officials and policymakers place most, if not all, of their emphasis on agents of accountability—i.e., teachers, low-level administrators (e.g., principals, district leaders), budgetary issues (e.g., low school or district funding), or contextual issues (e.g., class size), which have been shown to have virtually no impact on student achievement.

CHOMSKY’S INFLUENCE ON EDUCATORS

Although Chomsky’s work with children is relatively limited, his theory of universal grammar (UG) has

far-reaching implications for the classroom. First, and perhaps contrary to popular opinion, Chomsky believes that young children should not be corrected when they produce incorrect grammatical structures (e.g., “Jill runned to the store”). For Chomsky, whatever the child lacks with regard to linguistic capabilities does not remotely compare with what the child masters in terms of the complex grammatical system in any language. Accordingly, Chomsky believes that, given the innate wiring of language with a genetic blueprint, children are capable of learning language on their own. They will triumph over the trivial limitations and idiosyncrasies of a language. In addition, by five or six years of age, we have gathered, through Chomsky’s theory, that children grasp parts of speech whether or not the teacher includes the subject in the curriculum. So, although tree diagramming was favored before Chomsky’s theory was recognized, it is seen by many educational researchers and practitioners as a futile endeavor in the classroom.

As one of the key intellectual thinkers of our time, Chomsky raises important questions concerning the institution of education and how it affects society. First, why does it seem as if schooling is meant as a vehicle for promoting knowledge and free thinking when in fact, as Chomsky would posit, it does precisely the contrary? And second, why do institutions of education seem to be predisposed to holding teachers or low-level administrators accountable for the low achievement of students, when in fact it has been shown that the pervasiveness of problems like poverty and lack of healthcare are the sole factors of students’ poor academic performance? These questions have not been addressed by local, state, or federal officials. Time will tell whether Chomsky’s ideas, both in the psycholinguistic and sociopolitical realms, will be taken more seriously.

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COMENIUS

Comenius (1592–1670) was a preeminent theologian of the seventeenth century who was the first to develop a science of education and use this framework as a general philosophy to be attributed to all socio-economic levels (Piaget 1957). The life and works of Comenius are remarkable reflections of an individual whose life seemed to have been rife with paradoxes. First, theologians of the late Renaissance were not generally associated with scientific development and innovation. Second, and parallel to the first seemingly conflicting characteristic, theologians during Comenius’s time had a rather difficult time reconciling religious doctrine and the problem of knowledge in philosophical terms. And third, as a philosopher, Comenius’s ideas seemed to have run counter to most Western philosophers of his time, whose philosophical ideas seemed disassociated with the majority of the population (Spinka 1943). As an educator, Comenius hoped to bring education to the masses rather than keeping it a privilege for the elite classes.

HISTORICAL BACKGROUND

Comenius (Johann Amos Komensky) was born in 1592 in Nivnitz, a city in Moravia (Czech Republic). He was the third child and only son of a miller who belonged to a Hussite sect and was a member of the Moravian Brethren, a religious group. Orphaned at the age of twelve, his guardians misappropriated his savings, thereby leaving the young Comenius destitute. Nevertheless, he did receive a strong education with the usual Latin elementary school preparation. He received his higher education at the University of Herborn in Nassau, where he prepared for the ministry. It was at Herborn where Comenius met John Henry Alsted, a Calvinist theologian, who supposedly influenced him greatly. Shortly thereafter, in 1613, Comenius entered the University of Heidelberg, where he studied astronomy, especially focusing on the works of Copernicus. This experience may have contributed to his interest in reconciling religious doctrine with philosophy and science.

In 1616, Comenius was ordained and subsequently returned to Nivnitz where he became chief bishop of the Moravian Brethren. During his time in Moravia, he became a very prolific writer and well-

known teacher. As a result of the Thirty Years' War, Comenius was exiled from his native Moravia, and served as a schoolmaster in Hungary, Poland, Prussia, and Sweden. By 1642, his fame as a well-known educationist of his day almost led to the creation of a university in England based on his ideas. He was even asked to serve as president of the then young Harvard University. Comenius spent his final years in Amsterdam, revising and editing his earlier writings, and urging peace and political reform throughout the European continent.

KNOWLEDGE THROUGH LANGUAGE AND THE ORDER OF NATURE

Comenius earned his fame through a series of textbooks used to teach Latin. These textbooks differed from other textbooks of his day in that they included some of the new sciences. These works also reflected the emphasis on observation with regard to science. With language aside, observation, according to Comenius, was the foundation of all knowledge and inquiry, even with regard to scientific discovery.

One of his well-known publications, *Orbis Sensualium Pictus* (1970), discusses the earth, the sky, fire, various animal species, eclipses, geometry, and numerous other categories. The students of Comenius would learn Latin through the study of various subject areas (like the ones mentioned) as well as the natural environment. What made this work outstanding is the use of pictures to represent the actual phenomena. With 150 illustrated chapters, Comenius designed the work as a means of teaching Latin with the aid of short mnemonic sentences that a child would understand. The pictures were to serve as surrogates for the direct perception or observation of the phenomena themselves. Comenius did not simply write his texts to demonstrate collections of informational items. Rather, his pictures would serve as central themes whereby vocabulary and language would be learned. *Orbis Sensualium Pictus* was initially published as a German-Latin text in 1658 in Nuremburg. Many medievalists, philosophers, and scholars of education consider this work to be the first picture book for children. In sum, the work brought numerous subjects from all over the world into the home as a means for children to learn language through thematic essays.

THE GREAT DIDACTIC

Comenius began his most famous work, *The Great Didactic* (1896), in 1627 and completed it approximately five years later in 1632. However, it took nearly eighteen years for this grand work to be printed in its original Czech. A few years later, Comenius added several new chapters to the work, when it was finally translated into Latin. The work as a whole, *Opera Didactica Omnia* was published in Amsterdam in 1657. Unfortunately, Comenius did not achieve fame from this work, and it was not a work appreciated during his lifetime.

The Great Didactic (1896) served as the theoretical foundation of Comenius's educational program. In this work, Comenius devised a system in which he proposed universal education that was based on principles, and what he referred to as natural development. Because of *The Great Didactic*, many present day educational theorists refer to Comenius as the forerunner of educational thinkers who embraced a democratic view of the common school and provided insight into a universal educational process that would not be appreciated until several generations later. In this work, Comenius demonstrates his psychological insight into the development of thinking and learning by emphasizing the importance of a pupil's prior preparation to acquiring knowledge, the necessity of considering one's age when presenting particular concepts, and the teaching of the same subjects in different ways, depending on the learning style of the individual. This argument clearly anticipates the stage theories of the twentieth-century developmental psychologists such as Heinz Werner and Jean Piaget.

Through *The Great Didactic* (1896), we also find Comenius to be one of the first thinkers to examine everyday, spontaneous knowledge and how it benefits learning. Comenius identifies three rules, which serve as the foundation of learning:

1. Class instruction should be curtailed as much as possible, namely to four hours, and the same length of time should be devoted to private study.
2. Pupils should memorize as little as possible, that is, only the most important things; the remainder should be devoted to general meaning (i.e., conceptual understanding).

3. Curriculum should be arranged in order to suit the capacity of the pupil; the curriculum should increase naturally with study and age. (1896, p. 289)

To be sure, Comenius emphasizes the understanding of what is to be learned—the concepts—rather than the mere memorization of facts like verbal patterns or number computations. Today, the rules stated above are discussed and utilized often in schools of education and possibly in laboratory schools, where students of education and researchers of education can identify optimal learning experiences for pupils. However, it is unfortunate that they are rarely, if at all, used in general practice—that is, in most public and private schools.

CONTRIBUTIONS TO EDUCATION

The general impact of Comenius's works on education starkly differs today from that during his lifetime. In his own day, his contemporaries found him distinctive in writing Latin textbooks that included pedagogical technique in the teaching and learning of the academic subject areas. However, in posterity, Comenius left his mark as a forerunner of developmental and cognitive psychology. He emphasized the importance of what we refer to today as “developmentally appropriate practice,” which refers to the pedagogical procedure of identifying what a student can learn at a particular age level and basing that knowledge on what the individual has already learned. Comenius also was committed to developing a philosophical program whose mission would be to make education less a privilege for the few and more a universal entitlement. However, despite his supposed influence on contemporary educational practice, his ideas are still unfamiliar to most educational researchers and practitioners. There are few biographies of Comenius in the English language. In addition, educators and developmentalists often attribute the idea of prior knowledge as a necessary component for developmental learning practice to Jean-Jacques Rousseau, who was born forty-two years after Comenius died. Rousseau's credit may have something to do with the intentions of the French philosophers to expand the role of philosophy and education to include not merely the elite classes,

but the general public as well. Nevertheless, the works of Comenius that remain have served as a foundational corpus in education circles for the past three hundred years.

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CONFUCIUS

Confucius (551–479 B.C.E.) is universally acclaimed as one of China's—and, along with Socrates, Plato, and Aristotle, some believe the world's—most influential philosophical and educational figures of all time. Sinologists, students of Eastern philosophy, and modern scholars in general contributed to a revival of Confucius's ideas because his influences and contributions to life and more specifically to teaching and pedagogy seem to have impacted cultures and societies throughout history, even to the present time. Moreover, many believe that his contributions to philosophy and education cross cultural and societal boundaries. His overall influence is recognized in China as well as in the Western philosophical traditions.

HISTORICAL BACKGROUND

Confucius was born in 551 B.C.E. in Lu (which in modern times would be Qufu in the province of Shandong). His family name was Qui and given name was Zhongni. Due to political instability, his family, mostly aristocrats, left the region of Song for Lu in pursuit of safety. His father, originally a government official in Song, died when Confucius was a child. After his

father's death, Confucius, his mother, and siblings lived in poverty for a number of years. As a young adult, Confucius worked mostly as a manual laborer, often in substandard conditions. These positions were typically related to livestock and agriculture. Nevertheless, Confucius pursued a governmental career, and slowly rose through the ranks. By the age of forty, Confucius had become the prefect and head of public works of the city of Zhongdu, and subsequently the minister of defense and law for Lu, his home principality. There, he began to develop his political and ethical philosophy, which attracted a somewhat large group of followers. He and his students subsequently traveled to many parts of China, attempting to attract more adherents. However, with little or no success, Confucius returned to the principality of Lu, and spent his remaining years as a writer and teacher.

CONTRIBUTIONS TO EDUCATION

Prior to Confucius, education was a privilege and reserved almost exclusively for the upper classes. Before his time, the purpose of education in the Zhou dynasty was to prepare individuals for careers in government. This formal education would take place within government housing and would be carried out by the officials themselves. To do this, individuals would complete civil and military training through the so-called six arts (Yang 1993). These included archery, calligraphy (writing), chariot driving, mathematics, music, and formal rites.

What made Confucius a significant force in education, let alone in Eastern philosophical tradition, was his role as a dominant leader in the shift in education as a privilege for the primarily aristocratic class to one that would eventually benefit all people. Confucius lived in a turbulent time, one in which he witnessed society moving from slave ownership to a feudal system. With the upper class monopolizing education, Confucius was considered the first individual to garner a large group of students both rich and poor. He began to take students in his thirties, well before he became Prefect of Zhongdu, and had a total of more than three thousand during his lifetime. In addition, seventy-two of his students completed the six arts.

Confucius believed that all individuals, regardless of social class, were entitled to an education. This belief had implications for both political and cultural

reform. His work resulted in an acceleration of general education practices in China at the time.

Confucius was one of the first individuals to call into question the differences in human behavior and characteristics. He argued that humans are generally the same, and it is only the culture in which they live that molds a behavior and psychological disposition (with regard to ethics and intellect) different from others.

Confucius maintained that the two primary goals of any formalized system of education are moral and ethical instruction, and content or knowledge-based instruction. In addition, moral instruction would take precedence over instruction that imparted knowledge. This is because, Confucius argued, in order to build any form of stable government, the individuals in leadership roles must hold virtue as their primary objective in governing the lands (Ames 1999).

Despite his perseverance in emphasizing morality as the primary goal of education, Confucius was also resolute with regard to the importance of the growth of the intellect. In order to promote a feudal system as a replacement for oligarchic rule, Confucius believed that content knowledge was an essential part of developing a new form of society—one founded on the principle that all individuals can succeed in their goals and aspirations with a strong educational foundation. On these grounds, Confucius developed six manuals that were to serve as the foundation for learning and pedagogy. They are the Book of Odes, the Book of History, the Book of Rites, the Book of Music, the Book of Changes, and the Spring and Autumn Annals. Although these books deal primarily with leading a virtuous life, a large part of their content has to do with intellectually based subject areas that include economics, history, musicianship, philosophy, and political study. Since these books are believed to be the first set of works in Chinese history to cover a wide range of subject areas, they are often referred to as the Chinese classical canon, or “jing.”

CONFUCIAN PRINCIPLES, PEDAGOGICAL MODELS, AND EDUCATIONAL ENDS

What we find in present-day formal schooling, in many ways, are essentially staples of the pedagogical principles developed by Confucius. These principles follow a somewhat pragmatic style with regard to educational outcomes. First, Confucius believed that

students varied in aptitude and ability with regard to subject matter, and to some extent conduct and ethical habit. Accordingly, he believed that all students, despite his urge for universal education, did not necessarily learn the same way, and therefore required different methods and approaches. Each student needed an education that matched the respective aptitude. Second, students required inspiration as a means for guidance. Today, teachers often use the term “motivation.” Third, Confucius anticipated Hegelian dialectic nearly 2,400 years later with his determination to combine theory with practice. For Confucius, applied study was necessary in practice, but could not be affective without abstract contemplation. Fourth, he espoused independent and free thinking and did not believe that the teacher’s role was to subordinate the students. The habit of independent thinking encouraged self-analysis and introspection. Additional principles have to do with developing virtue as a student. These include respect for students of different ages, accepting criticism, the ability to set examples for less experienced students, and the realization and correction of mistakes (Yang 1993).

There is little doubt that Confucius was a profound teacher and bestower of knowledge. Confucius argued that a teacher must be fully engaged and committed to the practice of teaching. This prerequisite alone encapsulated the virtuous teacher. Moreover, he believed that the best teachers had a broad scope of subject area knowledge, and intimately cared for each student. It was the teacher’s responsibility to know the student’s disposition and psychological and intellectual idiosyncrasies in order to help that individual succeed in society.

In addition to pedagogical concerns, Confucius maintained that one of the most important ends of an education is to reach prosperity. In fact, in his writings, he would often state that reaching prosperity is more important than the formal education because the latter is only a means to an end. For Confucius, a healthy state is one in which its inhabitants live prosperous lives. And this can only happen if the educational system is strong and reaches the entire population.

CONFUCIUS TODAY

Although research on his output is relatively scant, Confucius’s contributions to education are momentous. His ideas have been universalized and the

utterance of his name is often associated with virtue and prudence. Moreover, his contributions span numerous fields of inquiry, which include intellect and how we think (psychology), how to conduct ourselves (philosophy), learning from events (history), mathematics, music, and a host of other areas as well. The ideas of Confucius became widely known throughout the East well before they reached Western nations. During the Qin and Han Dynasties, more than 2,000 years ago, his work reached the Korean peninsula and Japan. It was not until the middle to late 1500s that his ideas reached the West. When they did, numerous individuals realized the potential influence of the Confucian philosophical and educational perspective. In fact, many Western thinkers were associated with Confucius. For example, the great poet and playwright Johann Wolfgang van Goethe is sometimes referred to as the “Confucius of Weimar” (Yang 1993).

It is somewhat remarkable that Socrates, the eminent Greek philosopher, would be born approximately ten years after the death of Confucius. What makes this remarkable is twofold. For one, the approximate 500-year period between 700 B.C.E. and 200 B.C.E. seems to have marked an epoch that gave rise to some of the most productive thinkers of world history. And second, both Confucius and Socrates, although using different approaches, emphasized the necessarily important role of virtue and conduct in human life. Moreover, similar to the Western philosophical tradition in education, particularly outlined in the work of Aristotle, we see in Confucius, who of course preceded Socrates and subsequent thinkers, a determination to promulgate both morality and content knowledge as the two primary goals of education. However, Confucius, unlike the classical Greek thinkers during and after his lifetime, believed that a formal education was obtainable by anyone who pursued it, not just members of the upper classes.

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JOHN DEWEY

The philosopher and educator John Dewey has been acclaimed as one of the most influential American personalities in the realms of philosophy and education. Perhaps one of the most discussed and cited thinkers in the field of education, Dewey had established himself as a philosopher at the university at a time in history (the late nineteenth century) when the field of philosophy had just begun as a professional discipline. For the most part, Dewey's philosophy follows a pragmatic approach in which a social ideal is where each individual finds his or her own maximal potential through development. He was both an innovator and an iconoclast who sounded the clarion call for change. His contributions toward this goal are outstanding; and his impact on philosophy and education is enduring.

BIOGRAPHICAL BACKGROUND

John Dewey, the third child of Archibald Dewey and Lucina Rich, was born in Burlington, Vermont, on October 20, 1859. Dewey's father was a practical man and a successful shopkeeper who was respected in the community. His mother was an intense, independent, and religious woman with a spirit of social consciousness. His father's sense of the pragmatic and his mother's love of higher education and social consciousness were absorbed by young John and would later be reflected in his writings and his life.

Dewey attended public school in Burlington and graduated in 1874. After receiving his BA from the University of Vermont, he taught high school for three years. He entered Johns Hopkins University for advanced study in philosophy and received his PhD in 1884. There, he studied with leading philosophers of the late nineteenth century—Charles Peirce, George Sylvester Morris, and G. Stanley Hall.

Dewey's long and influential career in the field of

education began at the University of Michigan. Except for a year at the University of Minnesota, he taught there from 1884–1894. During his tenure at the University of Michigan, he became interested in educational philosophy and psychology. In 1894 Dewey moved to Chicago and served as the chairman of the combined departments of Psychology, Philosophy, and Pedagogy at the University of Chicago. It was at the University of Chicago where Dewey and Alice Chipman Dewey (his wife) directed a laboratory school consisting of kindergarten children. A good deal of his empirical research emanated from that experience. In 1904, Dewey left the University of Chicago for Columbia University in New York and taught there until his retirement in 1931. A number of Dewey's most influential writings were published during his time at Columbia University. However, Dewey did not stop working upon retirement; to the contrary, he published a number of seminal works during the last twenty years of his life. Dewey also traveled around the world, gave lectures, acted as a consultant, and studied educational systems in Mexico, Turkey, the Soviet Union, Japan, and China. He died in 1952. With nearly 750 publications—forty books and over seven hundred articles—to his name, Dewey remains one of the most prolific writers in the fields of philosophy and education.

PHILOSOPHICAL IDEAS

Dewey's initial contribution to philosophy was Hegel's idealism, at a time when Hegel's work was disparaged by empirical philosophers and physical scientists. Philosophy, according to Dewey, is an intellectual attempt to work out the conditions in which human beings can attain their highest fulfillment. This fulfillment is not attained in isolation but in mutuality and interaction with the environment.

Dewey observed that the traditional world concept was very static, dualistic, hierarchical, and idealistic. He saw the world not in isolation, but in connectedness; not in duality, but in dialectics; not static, but in progress. He, therefore, eventually abandoned his earlier philosophy of Hegelian idealism and subscribed to "instrumentalism." Instrumentalism is founded on experimental methodology and it uses reason as an instrument to solve human problems. He emphasized the importance of the experiential and the practical. Truth, in this context, is that

which works in one's experience. In this, he was greatly influenced by Charles Darwin and William James. Some critics labeled his philosophy as pragmatism but he favored the term instrumentalism or "experimentalism."

For Dewey, the scientific method or scientific inquiry is not to be owned by any particular discipline, say, in biology, physics, or any other branch of science. Rather, scientific thinking is to be used in any field of inquiry—it is a tool used for thinking, argumentation, deliberation, and arriving at conclusions. This, of course, poses a somewhat contradictory position to the Hegelian outlook. Nevertheless, Dewey argued that the field of philosophy needed to meld the two diametrically opposed strands of thought.

Human beings, according to Dewey, are organically interrelated to nature and the society they live in. He did not view the individual and society in opposition, but as complementary to each other. The individual was a "social individual" and society was an organic union of individuals. Democracy was the best way of overcoming the individual and the social dichotomy; it gave the best opportunity to maximize the optimal growth of the individual and society. Democracy, observed Dewey, should not be taken in its narrow sense as a form of government. For Dewey, democracy was a way of life. In *Democracy and Education*, Dewey (1966) stated: "A democracy is more than a form of government; it is primarily a mode of associated living, of conjoint communicated experience" (p. 87). It touches every aspect of human life: family, community, industry, school, and government.

EDUCATIONAL VISION AND PRACTICE

Dewey observed that there was an intimate relationship between philosophy and education. Education, according to him, was a laboratory in which philosophical ideas were tested and verified. When Dewey moved to Chicago he established a laboratory school. He was dissatisfied with the traditional schools. They were failing to adapt to the changing times and the demands of a democratic society. The new developments in child psychology and sociology prompted him to apply the findings to his school, which he headed until 1904.

Education, for Dewey, was growth. It is a con-

tinual renewal and re-adaptation to the environment. Central to Dewey's philosophy of education and pedagogy was his unique concept of experience. Education was reconstruction of experience. He applied the theory of organism and the environment in child's education. A child has instincts, impulses, and needs. This produces conflicts. It demands initiative, inventiveness, adaptation, and active participation. In education, therefore, a child is not a passive recipient of knowledge, but actively involved in the learning process.

School, for Dewey, was a form of community living and a reflection of the democratic society. In the traditional school, the teacher was an authoritarian figure. The teacher knew everything and the student was an empty pail to be filled. Dewey challenged this concept. According to him, a teacher was a guide who facilitated the learning process. He held the view that the method of teaching should be based on child psychology. A child's natural instincts and needs should be taken into consideration in teaching and learning. He emphasized the importance of experiential and experimental methods. Dewey (1966) observed, "An ounce of experience is better than a ton of theory" (p. 144). Occupational methods such as gardening, cooking, sewing, and carpentry were some of the examples he used in his school.

Dewey viewed curriculum as life itself. He did not subscribe to a concept of curriculum that was separate from real life. The curriculum in his laboratory school revolved around the child. The child's experience was the starting point from which learning experiences continually expanded in ever-growing circles.

Dewey did not approve of vocational education in its narrow sense, that is, training of an individual for industrial occupation. He approved of it in the broader sense of students having occupational experience as a slice of life. The division of curriculum into liberal education and vocational education, according to him, was "a plan of social predestination totally foreign to the spirit of democracy" (Dewey 1962b, 227).

RELEVANCE OF DEWEY'S IDEAS TODAY

Dewey's educational vision challenged and impacted the theory and practice of education, more specifi-

cally, in the United States. His emphasis on abandoning the traditional ways of teaching and learning and incorporating the latest findings in psychology and sociology paved the way for modern education. One of his great contributions to education was his focus on the centrality of experience in educational theory and practice. He insisted on having student-centered and experience-oriented education. The “progressive movement” seized upon this opportunity and some took liberty to go to the other extreme where learning became catering to the children’s whims. In his book *Experience and Education*, however, Dewey (1963) explained his position on this issue and stressed the importance of organized subject matter and discipline in the classroom. He, in fact, disassociated himself from any particular “ism.”

Dewey’s war on dualism and unrelenting insistence on integrating experience and reasoning, child and curriculum, school and society, and the individual and society had far reaching impact on education. Emphasizing the mutuality and dependence of the individual and society, Dewey (1897) remarked: “Society is a society of individuals and the individual is always a social individual. He has no existence by himself. He lives in, for and by the society, just as society has no existence excepting in and through the individuals who constitute it” (p. 55). In an atmosphere of rugged individualism and ruthless business culture, Dewey’s concept of the maximum individuality within maximum community is very important today.

In this post-9/11 world of religious intolerance, ethnic violence, and social discrimination, Dewey’s vision of democratic education is very relevant. Respect for multiculturalism and individual difference, cultivating spontaneity and creativity, and nurturing of diversity and individuality are derived from the same democratic ideal. Thus, another great contribution of Dewey to educational philosophy and practice is his democratic vision and its every day application to life. His seminal thought on experience and education, the social individual, and the democratic ideal have impacted American education and education around the world. Dewey, therefore, is considered one of the great philosopher-educators of the modern world.

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PAULO FREIRE

Paulo Freire (1923–1997) is regarded by contemporary educationists, social critics, and sociologists as one of the most influential thinkers in the field of education during the second half of the twentieth century. Since the 1950s, few individuals have made such sweeping impact throughout the world on the promotion of literacy, mathematics, communication skills for purposes of liberation, critical pedagogy, and education in general as Paulo Freire. As a social and political activist, Freire became known for his creation and development of literacy programs that promoted an anti-capitalist, anti-imperialist stance on behalf of oppressed peoples throughout the world. His seminal work *Pedagogy of the Oppressed* (1970) was one of the first publications in which the role of the dominant educational system of schooling and administration is challenged.

HISTORICAL BACKGROUND

Paulo Freire was born on September 19, 1921, in Recife, which is the capital of Pernambuco, one of Brazil's northeastern provinces. Born into a middle-class family, his father was a military officer. Both his parents were educated through the Catholic Church, and decided to educate their children in the same way. Freire reflected upon his childhood and viewed his father as someone who would always listen to what any member of the family had to say. This habit seemed to have influenced Freire a great deal and served as a foundation for his strong interest in communication skills.

As a result of the world economic crisis in 1928, the Freire family moved to the neighboring city of Jaboatão, a less-expensive area to live in and to educate children. After high school, Freire had an initial interest in law; however, financial difficulties forced him to work and provide for his immediate family. Nevertheless, he eventually earned his law degree and became employed, initially teaching Portuguese in secondary school from 1944 to 1945. Freire also served as a lawyer for the trade unions in Recife, where he organized union members and lectured on topics relating to the rights and entitlements of workers. His success as a trade union lawyer eventually helped him succeed to the post of director for the Department of Education and Culture for the Serviço Social da Indústria (Social Service for Industry [SESI]). Unlike other directors at SESI, Freire attempted to identify the needs of children and older students by involving parents of all socioeconomic levels and having them participate in discussions about educational and social issues that concerned society in general. Freire was no conformist. Despite his general success at SESI he eventually resigned from his post after much criticism with regard to his democratic, egalitarian form of administration.

In the early 1960s, Freire became a professor of literacy at the University of Recife. During the country's national literacy campaign, Freire worked with the peasants of the northeastern part of Brazil to help foster and promote their ability to communicate effectively. From this work, he developed a theory of literacy that identifies the use of literacy and communication as the primary conduit for critical thinking and dialogical discussion with the em-

powered class. When Brazil fell under military rule in 1964, government officials were wary of Freire's critical theoretical perspective and his desire to promote and teach critical techniques and practices to the peasants and other oppressed peoples for the purpose of liberation. As a result Freire was jailed for seventy-five days, and subsequently sent into exile. Freire left Brazil for La Paz, Bolivia, where the Bolivian government sought his services and made him an educational consultant. But, only twenty days after his arrival, the Bolivian government fell under a coup d'état. Chile was the second country to take Freire. He sought refuge in Santiago, Chile, and remained there for almost five years. In Santiago, Freire was given a professorship at the Catholic University and also worked on special assignment at the Santiago regional office of UNESCO. It was here that Freire wrote his well-known book *Pedagogy of the Oppressed* in 1970. Freire also lived in Mexico, the United States, Switzerland, and the islands of São Tomé and Príncipe. In the United States, Freire served an appointment at the Harvard University Center for Studies in Development and Social Change from 1969 to 1970. He subsequently served as a consultant to the Office of Education of the World Council of Churches in Geneva, Switzerland. While in Geneva, Freire served as consultant for a number of national educational systems including Guinea-Bissau, Angola, and Mozambique (Gerhardt 1993).

Freire finally returned to Brazil in 1980, where he served as a professor at the Pontifícia Universidade Católica de São Paulo and the Universidade de Campinas also in São Paulo. After 1980, Freire also provided consultancies in literacy education for numerous educational institutions throughout the world, including Fiji, Australia, and Italy (Gerhardt 1993). Further, in his later years, he worked with various oppressed cultural groups, fostering literacy programs on their behalf. He also served as honorary president for the International Council for Adult Education from 1985 to his death in 1997.

BANKING VERSUS PROBLEM POSING: THE PEDAGOGY OF THE OPPRESSED

Freire identified numerous problems with institutions of education in preparing students of differing socioeconomic levels. One of the most glaring incongru-

ities of education was the manner in which content knowledge was provided for students. Using Freire's own terminology, teachers attempt to deposit bits of knowledge into students' minds. The students are presumed to have absolute ignorance on the topics discussed. The role of the teacher is to bestow what is considered to be knowledge, and the role of the students is to be passive listeners. Freire refers to this traditional form of educational practice as banking.

In contrast to the banking practice, Freire refers to the problem-posing method. Through this method, the teacher does not exert dominance or authority over students. Rather, they serve as collaborators in the search for knowledge. The banking model assumes that all students, regardless of socioeconomic status and level of oppression, must be guided by so-called self-evident universal truths that are inherent in nature. Unlike this model, problem posing assumes that different groups of students, regardless of age, have different sets of circumstances, and therefore different sets of goals. And for this, the education for a particular group or culture must address the problems that afflict these individuals, and the purpose of this education is to enhance their lives and well being. The necessary key component for promoting and fostering problem posing is dialogue through the process of argumentation, whereby the teacher and student dyad is a dual learning relationship, not one in which the teacher imposes knowledge on the students.

Freire is clear when he discusses the importance of dialogue in the process of communication and liberation. As he argues in *Pedagogy of the Oppressed* (1970):

If people, as historical beings necessarily engaged with other people in a movement of inquiry, did not control that movement, it would be (and is) a violation of their humanity. Any situation in which some individuals prevent others from engaging in the process of inquiry is one of violence. The means used are not important; to alienate human beings from their own decision-making is to change them into objects. (1970, p. 66)

This excerpt also expresses Freire's devotion to the formation of a nonoppressive program in education. This program would engage, rather than prevent, individuals of all backgrounds in the process of inquiry and investigation. It would also include all forms of

education for all purposes—for example, general education for youth, education for liberation from oppression and poverty, and general adult education.

PRAXIS AND PEDAGOGY

The term "pedagogy" in the general sense refers to a method of teaching. This term is often used colloquially to describe a teacher's method of delivering instruction to students. The Webster's New Universal Unabridged Dictionary (1983) defines "pedagogy" as "the profession or function of a teacher" and "the art or science of teaching; especially, instruction in teaching methods" (p. 1320). In a more organizational sense, teachers and even faculty of schools of education use the term in a structured manner to refer to various teaching styles. Examples include teacher-centered pedagogy, student-centered pedagogy, or any of their derivative forms. In general, pedagogy used in this manner places the students as objects of manipulation, who are controlled by the strictures of larger entities—a municipality, a state, or a national government. That is, pedagogy is implemented in order to maintain national status quo—as objects, students must conform to the guidelines of society. Freire, in contrast, did not use the term pedagogy in this way. For Freire, pedagogy means to free oneself from the oppression of the dominant society, no matter how minimal or severe that oppression may be. Pedagogy, according to Freire, is a political tool used to acculturate students and to prevent a one-sided, culturally dominant perspective on any given learning situation.

Like the term pedagogy, the term "praxis," too, has been used by educators in a very loose manner. Unlike pedagogy, however, the general meaning of praxis is not necessarily diametrically opposed in meaning to Freire's own interpretation of the word. In a general sense, praxis refers to the act of using theoretical models in practice. Webster's Dictionary defines the term more broadly as "practice . . . distinguished from theory" (1983, 1414). But again, this definition is not quite what Freire had in mind. Praxis, for Freire, is similar to the manner in which the term would be defined in philosophical terms—namely, engaging in something with well-informed actions. That is, in order to act upon something, one must be knowledgeable and, at the same time, moral in the manner in which the action takes place. In light of

the Freirean view, *phronesis*, which in Greek refers to practical knowledge of any given situation, presupposes one's engagement in praxis. That is, to engage in praxis, one must have the appropriate knowledge and moral disposition before acting upon something (McLaren 1998).

The ideas of praxis and pedagogy complement each other in that both serve as prerequisites for problem posing. In the banking model, neither praxis nor pedagogy, from Freire's perspective, are implemented; clearly, if pedagogy is a tool for liberation, then its use would not accommodate the banking model. Similarly, if one engages in praxis, then it is assumed that the individual is informed and knowledgeable not solely from an intellectual standpoint, but from a social and practical perspective that has a great deal to do with the problems and situations of the students.

SUMMARY OF CONTRIBUTIONS TO EDUCATION

Freire was undoubtedly a key figure in the field of education in the latter half of the twentieth century. His ideas are still strong with progressive educators to the present day, and serve as a springboard for efforts in the liberation of oppressed peoples throughout the world. Despite his place in the field of education and his numerous contributions to literacy and the use of education as a tool for promoting critical consciousness and liberation, Freire has been criticized by educators and social theorists from the feminist perspective. First, Freire's writings, especially from his work in the early years to the 1970s, seem to have either ignored women's rights or have subordinated women's issues. However, since that time, his books and articles have gone through a number of revisions; Freire himself admitted that this was a problematic issue in his earlier writings (Freire 1996).

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FRIEDRICH WILHELM FROEBEL

Friedrich Wilhelm August Froebel (1782–1852), an eminent German philosopher and educator, is widely known as the inventor of kindergarten. In addition to his numerous contributions to early childhood development and learning, Froebel, among others of his day, influenced the direction of education as both a professional and academic field in Europe and eventually in the United States and Canada. Froebel was the author of numerous publications. Perhaps the most noteworthy with regard to his educational mission is his work *On the Education of Man*, first published in 1826, in which he outlines and defines pedagogical principles (Froebel 1911).

HISTORICAL BACKGROUND

Born on April 21, 1782, at Oberweissbach in the Thuringian principality of Schwarzburg-Rudolstadt, Froebel was the sixth child of a local pastor. It is somewhat poignant to consider that Froebel, commonly considered the inventor of kindergarten, documents his own early childhood experiences as dark and melancholic. As Wichard Lange (1862) chronicled in his biography, Froebel speaks of the "awful dawn of [his] early life." His mother died from complications of his birth when he was six months old. Moreover, nearly three years later, Froebel's new stepmother took little interest in the young boy. In fact, Froebel indicated his feelings of neglect when referring to both his father and stepmother. Life seemed to have changed for the better when, in 1793, Froebel moved in with his maternal uncle at Stadt-Ilm. There, he attended a local elementary school for nearly three years. His father, who still believed his son lacked the ability to attend college, insisted that he consider a vocational career. So, for approximately two years, from 1798 to 1799, Froebel trained as a forester and surveyor. However,

Froebel was more interested in an academic career. He thus enrolled at the University of Jena, where he studied natural sciences.

It is after this point that Froebel's interests in education and philosophy began to emerge. In addition to his contributions to pedagogy, Froebel was a life-long learner. After his brief encounter with architectural study in Frankfurt in 1805, which incidentally had a profound influence on his later work with early childhood development, Froebel was hired as a teacher at the Frankfurt Model School. In preparation, Anton Grüner, the school's headmaster, sent Froebel for a brief period to study with the well-known educational thinker of the time Johann Pestalozzi at Yverdon. With a strong interest in the Pestalozzian notion of an "object lesson," which allowed teachers to instruct students through direct observation of various objects, Froebel returned to Yverdon in 1808 to study with Pestalozzi for two more years. Having a deep interest in the structure of language and wishing to apply linguistic theory to his pedagogical principles, Froebel pursued study at the University of Göttingen from 1810 to 1812. In addition to language, he was also devoted to the study of earth science and its various subdisciplines, and pursued this course from 1812 to 1816 at the University of Berlin.

Froebel's career as an educator flourished after 1817, after which point he established a number of schools and institutes of learning. During this time, he initially established schools in Germany and later in Switzerland, where he lived from 1831 to 1836. In 1837, at the age of 56, Froebel returned to Germany where he established the child's garden, henceforth kindergarten, which was devoted to early childhood development. With a mixture of Rousseauan, Hegelian, and Pestalozzian influence, kindergarten was seen as an initial educational experience for children that merged both informal (learning in one's everyday context) and formal (learning in an educational institution) environments. With the profound influence of nature and the ideas of Pestalozzi, Froebel believed that young children need a conducive environment in order to fully develop in both cognitive and social domains. His creation of more than twenty objects for learning, known as Gifts, propelled his early childhood program and gained the interest of educators throughout Germany. Although kindergartens blossomed throughout the German regions, they seemed to have waned for a

while, especially in Prussia. Froebel's free-thinking pedagogy was criticized by the more dogmatic and doctrinaire Prussian government. They eventually banned kindergarten altogether. Nevertheless, after Froebel's death in 1852, kindergartens sprouted up throughout the region, and eventually throughout Europe and the North American continent.

THE IMPORTANCE OF OPPOSITES AND UNITY IN EDUCATIONAL PROCESSES

For Froebel, the role of opposition was very important in the development of all things. The principle of opposites means that one looks for causes of behavior not in what resembles this behavior, but rather in what is radically different from it, a procedure that anticipates psychoanalytic theory, which is to appear almost one century later. As Froebel clearly states, "In good education, then, in genuine instruction, in true training, necessity should call forth freedom; law, self-determination; external compulsion, inner freedom; external hate, inner love" (1911, 13–14).

THE KINDERGARTEN AND THE GIFTS: FROEBELIAN INFLUENCE ON BLOCK PLAY

Froebel believed that in order to maximize cognitive and social development, an environment must be created in which young children can learn through free-thinking activities. Perhaps the most important aspect of Froebel's connection with young children's early formal educational experiences in general, and their involvement in mathematical activity in particular, is his invention of more than twenty Gifts. These gifts consisted of both two- and three-dimensional objects created specifically for the purpose of allowing young children to explore and develop their minds through both mental and physical manipulation of objects. Froebel's gifts included the following objects:

1. Six soft spherical objects of different colors
2. A sphere, cube, and cylinder all made of wood
3. A large cube made up of eight smaller cubes
4. A large cube made up of eight oblong blocks (rectangular prisms)

5. A large cube made up of three sections: 21 smaller cubes, 6 cubes that were half the size of the 21 cubes, and 12 cubes that were half the size of the 6 cubes
6. A large cube comprised of 18 oblong blocks
7. Rectangular and triangular tablets used for the purpose of arranging different geometric figures
8. Sticks for the purpose of outlining geometric figures
9. Rings comprised of wire, both whole and half pieces, for the purpose of outlining figures
10. Arts and crafts materials for the purpose of braiding, drawing, embroidering, modeling, perforating, and weaving objects or cutting and folding paper

With the profound influence of Froebel's gifts, blocks have become one of the most popular of toys and play materials for children in both Europe and the United States (Provenzo and Brett 1983). For example, in the late nineteenth century, influenced by Froebel's Gifts, the Crandall family had become one of the most successful manufacturers of children's blocks, and was credited for the creation and development of the interlocking block. Friedrich Richter, another Froebelian, developed the Anker-Steinbaukasten, or anchor block (made of highly compressed sand), which had become quite popular in the United States in the late nineteenth century after its success in Germany and the rest of Europe. The importance of the Richter blocks, which were founded on the principles of Froebel's Gifts and Occupations, lay in their construction, which is said to have fostered young children's intellectual development and flexibility in geometric thinking (Brosterman 1997). Richter's article "Stereometry Made Easy" (stereometry refers to the measurement of solid geometric figures) allowed children to explore with solid geometric blocks and also extend the notion of shape identification to the actual measurement of solid bodies (see Brosterman, 1997).

Froebel was perhaps one of the first individuals to connect young children's cognitive skills with their use of hands-on block materials—the Gifts or Occupations. After Froebel, one of the most noted individuals who encouraged the inclusion of blocks (particularly unit blocks) in the educational curriculum was Caroline Pratt.

Pratt made unit blocks the centerpiece of her educational curriculum and agenda (1948).

FROEBELIAN INFLUENCE

Froebel's contributions are evident in most school settings today, and, unlike other educational theorists, his ideas were put into practice in the years following his death. Balfanz (1999), for example, discusses how Friedrich Froebel's Gifts, both two- and three-dimensional materials that were designed and intended to promote young children's understanding of geometric concepts, influenced numerous individuals in different mathematically related fields. In addition, his ideas seem to have impacted the lives and careers of well-known architects and designers. In architecture, as shown in Brosterman (1997), Frank Lloyd Wright expressed his indebtedness to Froebel's ideas and techniques on numerous occasions. In one of his autobiographies, Wright recalled working with Froebel's Gifts to create geometric designs and models of buildings, which he further contended had a profound impact on his career. Wright was not the only architect who explicitly recognized Froebel's influence on later thinking. The Swiss architect Le Corbusier (whose birth name was Charles-Édouard Jeanneret) also acknowledged the importance of Froebelian Gifts as an important catalyst for his later endeavors in architecture. Le Corbusier, whose kindergarten experience included a great deal of Froebelian influence, designed buildings that explicitly demonstrated Froebel's creative approach to the learning of geometry.

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JOHANN FRIEDRICH HERBART

Johann Friedrich Herbart (1776–1841) was a German philosopher who made significant strides in the emergent fields of education and psychology. Herbart emphasized a full examination of the psychological processes of learning as a means of devising educational programs based on student aptitude, ability, and interest. By asserting that a science of education was possible, Herbart furthered the idea that education should be a subject for university study. His perspective of education was one whose most important goal was to develop individuals' inner freedom and moral character. He is often considered the first individual to organize the field of pedagogy into a full-scale discipline of study. Herbart's interest in pedagogical methodology was not incidental; pedagogy was of primary (not secondary) interest to him. He was a prolific writer in the field of professional education and established an experimental school in which he tested his theories. Herbart then connected his theoretical approaches to education with his work in metaphysics, ethics, and psychology.

BACKGROUND

Herbart was born on May 4, 1776, in the north German town of Oldenberg. While attending the University of Jena between the years 1794 and 1797, Herbart's mentor was Johann Gottlieb Fichte, the philosopher from whom Herbart would eventually distance himself as he developed his own practical philosophy. Herbart rejected the idealistic philosophy of Fichte and Georg Wilhelm Friedrich Hegel on grounds that he believed it failed to explain a form of knowing founded on experience. Despite his departure of thought from Fichte, Herbart would still be true to his mentor's style. Herbart's career began in

1797 after his university studies at Jena, when he accepted the position as a private tutor in Bern, Switzerland. He left Bern in 1800 to become an independent scholar and tutor. Two years later, Herbart accepted a position as professor of philosophy and pedagogics (a term to refer to a scientific study of education and teaching) at the University of Göttingen, and was to remain there for seven years. As a university professor, his name had become synonymous with his methodological approaches in education and philosophy. He attracted masses of students at the University of Königsberg, where he served as the chair in philosophy, a position vacated by Immanuel Kant in 1809. Herbart served as university professor at Königsberg until 1833, at which time he returned to Göttingen. He remained at Göttingen for the rest of his life.

THE HERBARTIAN APPROACH TO PSYCHOLOGY

According to Herbart, the most essential sphere of psychological activity is that of cognition. All other psychological spheres, for example that of emotion or will, are subordinate to cognitive behavior. This Herbartian position thrusts the field of education into motion because it presupposes knowledge as the fundamental core of learning. He believed that human experience emanates from what he referred to as presentations (*Vorstellungen*). Presentations arise from the use of the senses and the realms of pain and pleasure. Moreover, Herbart categorized the presentations. Those that derive from the idea or object that caused the presentation, through acts of comparison, abstraction, or generalization, develop into concepts. Herbart's view parallels that of Rousseau in that he believes that children develop presentations from experience. As Herbart states, "Capacity for culture then, depends not on a relation between several primordially distinct capacities of the soul, but on a relationship amongst each other of presentations already acquired, and again between them and the physical organization. In both respects the pupil will need careful observation" (Herbart 1898, 114).

Experience and reflection are central to Herbart's philosophy of education, and serve as starting points for his idea of educational teaching. Like his predecessors, Herbart recognized the distinction between

education and teaching. He argued that education has to do with the shaping and even the modification of one's character with the aim of improving the individual and, therefore, improving society. Teaching, however, deals with the realities of presenting knowledge, imparting skills, and demonstrating relationships. The instructor's ability to teach was the central activity of education. Unlike his predecessors, however, although he recognized the distinction between education and teaching, Herbart made the effort to link the two ideas. Through these efforts, he concluded that teaching played a subordinate role to education. For Herbart, the external influences (more or less punitive measures) did little to advance the student's moral and intellectual character. Instead, appropriate teaching, which emphasized cognitive development, was the most effective means of fostering student success in the field of education.

HERBART'S TEACHING METHOD

Herbart's teaching methodology is based on five chronological steps: preparation, presentation, association, systematization, and application. Each of the five steps is discussed in detail below. However, given their somewhat reciprocal relationship, association and systematization are discussed together.

Preparation

Preparation is the first step in Herbart's method of teaching. For Herbart, preparation was a quintessential attribute of teaching because it allowed for two important components—a motivational component and a cognitive component. Motivational devices were both intrinsic and extrinsic. Intrinsic motivational devices involve the instructor's ability to tap into her students' interests, ambitions, and pursuits. Extrinsic motivational devices have to do with the teacher's use of punitive measures for keeping students' attention on track with the topic under investigation. In addition to motivational devices, Herbart argues, cognitive devices are also employed under preparation. This involves what the student has learned leading up to the present topic. It can be recollection of ideas that are similar to the one being discussed, or it may have to do with causal relationships to the topic at hand. The teacher's task is to turn old lessons that might

seem nebulous or out of balance with the new material into useable material so that students have the opportunity to establish connections between what they have learned and what is being taught.

Presentation

The second step in Herbart's method of teaching is presentation. The main objective of presentation has to do with a clear awareness of what is to be learned as an object or unit of instruction. Examples of a single object or idea would be a story, experiment, poem, or an algebraic principle. Rousseau's influence on Herbart can be seen here because presentation involves the apperception—the process of fully understanding something based on knowledge of prior experience—of the object in question. Herbart did not relegate presentation solely to sense perception; all objects of presentation would be advanced through verbalization.

Within the component of presentation, Herbart discussed the symbiotic relationship between experience or concentration (*Vertiefung*) and reflection (*Besinnung*). He referred to these two additional areas as “mental respiration”; the student would learn new material of a topic as if it were an element having its own quality. The student would then think of the new element with respect to what he has learned from prior experience, thus allowing reflective practice.

Association and Systematization

The third and fourth steps in Herbart's method of teaching are association and systematization. These steps are intended to foster the student's conceptual ability by comparing and contrasting between instances of a phenomenon under study. While association deals with the analysis of instances of a phenomenon, systematization, on the other hand, has to do with the grouping of information and principles so as to organize parts and structures into a unified whole (e.g., parts of the body, the generalization of past tense formation). It may seem as if association and systematization are reciprocally related in that, with association, one deals with the analysis of an object while with systematization there is a grouping together of component parts to make a whole. In short, association and systematization involve the analysis and synthesis of new experiences. Although

Herbart parted with Hegelian philosophy, he seems to have incorporated it here, as the interaction between association and systematization heralds Hegel's dialectic of thesis and antithesis. Through the interrelated nature of association and systematization, the theoretical position anticipates future educationists like Friederich Froebel in the nineteenth century and Benjamin Bloom in the twentieth century.

Application

The fifth and final step in Herbart's method of teaching is application. In this phase, students are given projects (teachers often refer to projects as tasks, worksheets, or exercises) in which they are tested so that teachers can identify strengths and weaknesses of current and previous knowledge. To possess strengths, according to Herbart, students must possess cognizance with regard to new material, establish connections between new material and prior knowledge, and have the ability to summon what has been learned for future learning. Students may be asked to identify a set of concepts, or they may be asked to provide a generalization of the content learned.

HERBARTIANISM AND EDUCATION

In many ways, Herbart's worldview with regard to education and pedagogy established the framework for several countries' educational systems and served as a starting point for future educationists' theories and philosophies. Although his work seems to be quite familiar in schools of education and psychology, his development of a pedagogical science did not appear to influence educators in his own day. A number of years after his death, however, there have been numerous revivals of his method of pedagogics. An educational movement known as Herbartianism followed as numerous societies and centers focusing on his work were established in both European and American cities.

The underlying structure of lesson planning seems to have had its precursor in Herbart's pedagogical framework. We see this in various steps of his teaching method. For example, he discusses motivational and cognitive components in the preparation step. Today, we would see these ideas in the beginning of any "procedures" section of a lesson plan. Sections titled "Focus and Review" or "Anticipatory Set" are

almost always used as a means to motivate students on the one hand, and identify their prior knowledge on the other. Herbart's philosophy on education and pedagogy, however, was not intended to promote teachers' dependence on models at the expense of avoiding knowledge of the content. On the contrary, teachers are to be proficient and skilled in their fields of interest and should not use models of teaching as surrogates for general knowledge.

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JOHN CALDWELL HOLT

John Caldwell Holt (1923–1985), a well-known educator and critic of compulsory schooling, was best known as an outspoken opponent of public or private educational institutions and mass education in general. Holt was an unequivocal advocate of home schooling, and left an estimable legacy to his followers and to education in general. He believed that children who were provided with a rich and stimulating learning environment would learn what they are ready to learn only when they are ready to learn it. This philosophical approach to educative practices may seem obvious to many people. However, in his day it was considered radical or progressive thinking. Today it is referred to as "unschooling" and "child-led learning" (not to be confused with child-centered learning, which is a pedagogical practice embraced in many school settings).

HISTORICAL BACKGROUND

Holt was born on April 14, 1923, in New York City to fairly affluent parents. The family moved to Bos-

ton when Holt was very young; his parents sent him to private schools in the United States and in Europe. Holt attended Yale University where he majored in industrial engineering. He subsequently lost interest in the engineering route. As an adult, Holt would never reveal the names of the schools he had attended because it was his strong conviction that the institution of school, both public or private, does not prepare students with what they need to know, both socially and intellectually. After serving on a submarine base in the Pacific Ocean during World War II, Holt moved to New York where he worked for the American Movement for World Government and subsequently with the United World Federalists, an organization whose mission was to prevent the proliferation of nuclear weapons in countries worldwide. After spending almost two years in Europe, Holt returned to the United States in 1953 and settled for a brief time with his sister in Taos, New Mexico. It was in the United States that his career as an educator seems to have blossomed. Although Holt was eager to become a teacher, he knew at this point that he had little knowledge of pedagogical technique. He soon became a teacher of the Colorado Rocky Mountain School, where he admittedly conformed to the systemic practices of schooling (i.e., following the strictures of a bureaucratic culture of schooling).

Holt spent the next decade in Massachusetts from 1957 to 1967 teaching at both elementary and secondary school levels. During this time, Holt became convinced that compulsory schooling was the problem and not the solution to children's development and learning. He served on the faculties of the University of California at Berkeley and at Harvard University, and wrote numerous books on the subject of alternative ways to educate children. He spent his remaining years thinking about how children can maximize learning potential through teaching and learning settings that were alternatives to compulsory schooling. Holt died on September 14, 1985, at the age of 62. A number of his books and articles, uncompleted at the time of his death, were later finished by close colleagues and students.

THE PROGRESSIVE EDUCATOR

Holt is not simply known as a critic of public schooling practices; his agenda, which was much broader

in scope, included private schooling and parochial schooling practices as well. In fact, he was incredulous, let alone troubled, over the manner in which the culture of schooling undermined children's social, physical, and intellectual development. Holt was a teacher in private schools between the end of the post-World War II period and the time he wrote his first book. His first book, *How Children Fail* (1964), is a sharp critique of the educational system of schooling in the United States and even abroad. In short, Holt was disturbed by the way that public and private schools conform to institutionally mandated doctrinaire practices that have little or nothing to do with young children's proclivities, curiosities, and motivations to learning. Moreover, he was unnerved by teachers who, based on what they wanted to hear, praised students' performances at the expense of questioning and critical examination in a subject. Both *How Children Fail* and his subsequent book *How Children Learn* (1967), which denounces large class size, are classics among the many diatribes critiquing educational schooling practices during the 1960s and 1970s. At present, they have sold over 1.5 million copies and serve as required reading in many introductory education courses. In the late 1960s, Holt's ideas became widespread among critical educators. With the aim of reaching a wider audience, Holt founded Holt Associates, Incorporated, in 1969, and subsequently became its first president.

THE ALTERNATIVE-SCHOOLING MOVEMENT

During the 1970s, Holt realized that the schooling system in its present state could not be reformed. Holt's dissatisfaction with the dicta of his contemporaries (who included Jonathan Kozol, Herbert Kohl, and Ivan Illich)—a group with which Holt's name was commonly associated—became so pervasive that he disassociated himself from any type of schooling that was configured to accommodate mass numbers of students. Of course, this was the case with nearly the entire national school system. By the early 1970s, Holt arrived at the conclusion that education involving learning for the sake of learning, teaching and learning by transforming the mind, and the facilitation of creative thinkers could never be accomplished in the typical school setting.

Although Holt's position on education and

schooling was similar to that of his former colleagues, he identified key characteristics as to how his ideas differed from other thinkers of education. For example, in 1976, Holt published his book *Instead of Education* in which he argued that an individual or group's will to change the educational system is futile. Rather, the aim of change agents should be "unschooling," that is, educating in the home, where bureaucratic agendas play little if any role in the education of youth. Holt distinguished himself from Illich, who coined the term "deschooling" in his book *Deschooling Society* written in 1971 (Illich, however, did not support the home schooling movement).

SUMMARY OF CONTRIBUTIONS TO EDUCATION

Holt is remembered as perhaps the sharpest critic of compulsory education. Indeed, there were numerous educators who have vehemently opposed typical schooling practices whose constituents embrace conformity and compliance. However, these individuals, like Paulo Freire and Ivan Illich, were well known as a result of their contributions to the empowerment of underrepresented populations. In strengthening his position on the role of education in society, Holt was, on the one hand, revolutionary in the liberal sense in defining the importance and necessity of children's inquisitiveness and facilitation of childhood creativity in the school setting. On the other hand, Holt was dismayed with the positions of a number of critics in the so-called progressive camp—a philosophical school to which he once belonged. He was bitterly dissatisfied with mass education, whether in a public or private setting. For Holt, the expressions "the teacher as facilitator" or "the child's construction of knowledge" merely became catchphrases in the progressive movement in mass education. Gradually, the use of these terms became associated more with the political agendas of educational administrators and far less with the education of children and adolescents.

Holt's beliefs about schooling and education are not without critical examination. First, his belief, developed clearly in his book *How Children Learn* (1967), that small class size maximizes learning potential, is not supported by evidence. Although students may be learning in a teacher-centered

environment, a number of school settings in the United States, Europe, and particularly in East Asian countries produce high-achieving results in many subject areas.

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IVAN ILLICH

Ivan Illich (1926–2002) is perhaps one of the most overlooked progressive scholars in the field of education. As a theorist, he became well known for his sharp critiques of modern schooling and institutions of education in general. Although Illich's entire corpus of contributions did not emphasize educational issues per se, his well-known book *Deschooling Society* (1971a), as well as a number of subsequent works, greatly influenced the progressive education movement throughout the world. Along with Paulo Freire, Ivan Illich stands as one of the most progressive reformers of world education.

HISTORICAL BACKGROUND

Born in Vienna in 1926, Ivan Illich was one of three sons of Peter Illich, a prosperous civil engineer. Due to his somewhat well-to-do upbringing, Ivan and his two younger brothers received a good education and were able to travel throughout the European continent. In 1936, Illich attended the Piaristengymnasium, but was forced to leave in 1941 because the Nazis claimed that his mother was of Jewish ancestry, despite the fact that his parents were Roman Catholic (Smith and Smith 1994). After completing his pre-college studies in Florence, Illich went on to study histology, the anatomical study of animal and plant tissues, and crystallography at the University

of Florence. However, entering the priesthood was more interesting to him than the biological sciences. As a result, he entered the theology and philosophy program at the Gregorian University in Rome in 1943. Illich graduated from the Gregorian University in 1946 and, five years later, in 1951, he decided to pursue a doctorate at the University of Salzburg, where he wrote a dissertation having to do with the history of knowledge. It was through his pursuit of a Ph.D., in studying the institutionalization of the church since medieval times, that Illich became interested in the underlying problems with modern institutions—a topic which would resonate in his critiques on formal education nearly twenty years later. Upon receiving his Ph.D., Illich moved to Washington Heights in New York City, where he served as a priest. As a priest of mostly Puerto Rican immigrants, Illich became fluent in Spanish, and began to speak strongly on behalf of the rights of Puerto Ricans by challenging the dominant culture (Smith and Smith 1994).

Illich left New York to become vice rector of the Catholic University in Ponce, Puerto Rico. However, by 1960, he was asked to leave his post because he opposed the bishop of Ponce's mandate that forbade Catholics in the diocese to vote for Luis Muñoz Marín, a governor who supported positions that were contradictory to the Catholic Church. Illich returned to New York and founded the Center for Intercultural Formation at Fordham University. The center was created to prepare American missionaries to work in Latin American countries.

During this time, Illich was vehemently opposed to Pope John XXIII's call for the modernization of the Latin American church in 1960. Instead, Illich urged missionaries to learn Spanish and to recognize that their own experiences are limited, especially when they are visiting peoples of cultures other than their own. Although the center was founded in New York, Illich insisted that it be based in Latin America. Illich and some of his associates renamed it The Centre for Intercultural Documentation (CIDOC). Given its mission to question past practices, especially if these practices led to bureaucratization, some elements of the Catholic hierarchy criticized the center and its challenge of authority. The Vatican eventually ordered Illich to dismantle CIDOC. Illich's strong views on the liberation of the church and democracy as well as his critique of the bureaucratization of the

church, and eventually with schooling, led him to leave the priesthood in 1969. The period between 1969 and 1980 were formative years for Illich with regard to his most significant contributions to education. Perhaps his most famous work, *Deschooling Society* (1971a) took a critical look at the institution of schools. During this same period, he wrote *Energy and Equity* (1974), a critique on energy consumption, and *Medical Nemesis* (1976), which investigated the institutionalization of medical treatment. Illich's interests shifted somewhat after this period from the institutionalization of schooling to a rigorous examination of the problems of institutionalization as a societal concern. For example, *Tools for Conviviality* (1973b) calls for a reorganization of societal structures and institutions in general.

By the 1990s, Illich eventually spent part of his time in three countries: Mexico, the United States, and Germany. He was a visiting professor of philosophy and science, technology, and society at Pennsylvania State University and taught philosophy at the University of Bremen. At the same time, he collaborated with numerous individuals who wished to work with him on projects that dealt with education as an egalitarian endeavor. Ivan Illich died in 2002.

DESCHOOLING SOCIETY

The precursor to *Deschooling Society* (1971a) was a short article originally published by CIDOC in 1968, and subsequently included in the book *Celebration for Awareness* (1971b), entitled "School: The Sacred Cow." In this article, Illich contends that the purpose of public schooling is not to educate students, but to limit their cognitive and social abilities so that they maintain the status quo. He was strongly opposed to the centralization of public schooling, the internal bureaucratic leadership, and the gross inequities that public schooling imposes on students. Another work that led to *Deschooling Society* was a book entitled *Who Does the School Serve in Latin America* (1973a). Originally written in Spanish, this book elaborated on the topic presented in his 1968 article.

Deschooling Society (1971a) is a remarkable polemic that investigates and challenges the assumptions of mandatory, state-run schooling procedures. A number of arguments are presented in this book. Illich's main argument with educational practice is

that the individual's right to learn is greatly limited by obligatory schooling. For Illich, schooling is dehumanizing and does not serve as an appropriate model for universal education because the systemization of schooling fails to recognize and appreciate the values of nondominant cultures.

Many students, especially those who are poor, intuitively know what the schools do for them. [The system] school[s] [the students] to confuse process and substance. Once these become blurred, a new logic is assumed: the more treatment there is, the better are the results; or, escalation leads to success. The pupil is thereby 'schooled' to confuse teaching with learning, grade advancement with education, a diploma with competence, and fluency with the ability to say something new (p. 1).

As an alternative, Illich believed, first, that different, unconventional institutions needed to be formed. Second, the schooling system's reliance on accountability as a measure of student progress is futile. Illich strongly criticized the schooling system for attempting to modify individual elements—teachers, administrators, teacher education institutions—as a means of attracting the public's attention. The success of a student's education does not depend on a single change of a teacher's disposition, a change in administration, or more educational materials. In sum, bureaucracies of any kind (e.g., schooling, welfare, transportation, health) only serve to preserve the status quo—protecting administrative positions—and to subjugate the people who they are serving by having them believe that they are being assisted. Third, new formal educational institutions would provide enough resources for students to access any information they wanted. Fourth, these institutions would also provide the students with the opportunity to study with experts in a particular field of interest. And finally, these institutions would also serve as a venue for students to present their own ideas through the process of dialogue and argumentation.

In promulgating the vision of an alternative institution of education, Illich identified three methods by which it could promote an alternative learning process. He refers to these methods as "learning webs." These learning webs include the following:

1. Reference services to educational objects, which facilitate access to things or processes

used for formal learning (e.g., libraries, museums, theaters, factories, farms, etc.).

2. Skill exchanges, which permit persons to list their skills, the conditions under which they are willing to serve as a model for others who want to learn these skills.
3. Peer matching, a communications network which permits persons to describe the learning activity in which they wish to engage.
4. A directory giving the addresses and self-descriptions of professionals, paraprofessionals and freelancers, along with conditions of access to their services. (1971, pp. 50–51).

ILLICH'S IMPACT ON CURRENT EDUCATIONAL SYSTEMS

Although Illich's contributions may not necessarily seem to influence the systemic concerns of schooling, there are a number of ways in which his ideas have contributed to the learning process. First, through his ideas regarding learning webs and with the advent of the Internet age, individuals who wish to broaden their knowledge in particular areas of inquiry can do so through virtual learning. In particular, one of the main purposes of virtual chat rooms and blogs is to present a topic to other parties, some of whom would be experts in the field of inquiry in question, who would then possibly be able to critique or expound on the writer's ideas. In addition, through the Internet, experts can be identified in different parts of the world. With regard to Illich's call for "skill exchanges, peer matching, reference services to educators at large, and reference services to educational objectives" (1971a, pp. 50–51), various chat rooms and Internet sites offer peer to peer, novice to expert, and expert to expert interactions. Second, current research on school achievement and poverty (Epstein and Sanders 2000; Johnson, Johnson, Farenga, and Ness 2005) appears to support Illich's view that "nowhere else should it be so evident that poverty—once it has become modernized—has become resistant to treatment with dollars alone and requires an institutional revolution" (1971a, 4). Finally, Illich's critique of the bureaucratization of society highlights the self-promoting function of welfare related institutions. Illich broadly claims that the result of

such policies establishes “a professional, political, and financial monopoly over the social imagination, setting standards of what is valuable and what is feasible” (1971a, 4).

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ISOCRATES

Isocrates (436–338 B.C.E.), a contemporary of Plato, was a philosopher of the Sophist tradition in that, like nearly all other Sophists, Isocrates received payment for his services as an instructor and bestower of knowledge. His major accomplishment and educational contribution was to combine two distinct lines of activity with regard to education: (1) the study of rhetoric, and (2) encyclopedic knowledge. The study of rhetoric was an important and practical part of the male Athenian educational tradition in that it served as the means to a successful career as a politician on the one hand and, in a more practical sense, it shaped the student’s ability to speak and persuade the public in an effective manner. An encyclopedic knowledge, the Sophists believed, was one of the answers to an ever-changing and more complex society, a way of providing the citizen with a broader educational base.

EDUCATION AS A SOURCE OF EMPOWERMENT

The later Sophists, like Isocrates, lived during a period of political and social crises that marked the decline of Athens as a political power shortly after the Peloponnesian War. As a result of the Spartan victory over Athens, Isocrates viewed instruction in rhetoric as the primary vehicle for reforming the state, educating politicians to undertake the challenges of the post-Peloponnesian era of Athens. To achieve a successful form of instruction for rhetoric, Isocrates, like other Sophists, attempted to combine ethics with the practicalities of political and social action. Isocrates believed he had accomplished this through pan-Hellenism—the unification of all of the Greek states—for which he was able to provide both an ethical and a practical justification.

ISOCRATES’S APPROACH TO INSTRUCTION

To date, no detailed account of Isocrates’ instructional procedures has been found. However, historians and educators have identified a number of his methodological programs through his literary works. In fact, at the present time, the literary works of Isocrates are the earliest known evidence of instructional method through imitation. In *Against the Sophists* (1959), Isocrates argues that the teacher must combine the art of instruction with setting an example for students. For Isocrates, students learn not only through imitative techniques, but also by identifying patterns through the teacher’s didactic methods. This is perhaps the first instance in which we see an expert—the teacher—and a novice—the student—in a setting where the teacher is the master and bestower of all knowledge and the student must follow the teacher’s instruction in a rigid manner.

The words of Isocrates, then, can be seen as a precedent to one of the major themes of educational practice in the nineteenth and twentieth centuries—namely, that the teacher possesses full authority over students, who learn content in a more or less passive manner. In his literary work *Antidosis* (1929), Isocrates makes a number of points, comparing the education of the mind to that of the body, which implicitly suggests his method of student instruction. Since repetitive techniques strengthen the body

in preparation for athletic contests, Isocrates argues that physical trainers must instruct their students through repetition of proper technique. Along similar lines, teachers of philosophy—that is, of the mind—must impart knowledge to their students through discourse. The teacher takes what he has taught his students in their initial lessons and prepares exercises that the student will learn and practice through habit and repetition. Unlike Plato, who viewed many forms of knowledge as universal truths, Isocrates saw knowledge as a collection of empirical instances in which one can identify truth through the number of times that something occurs. For Plato, knowledge was viewed as certainty, while for Isocrates, knowledge was viewed as probability.

Isocrates' method of instruction can be divided into three parts. The first was instruction in something he referred to as "ideas," or the thought elements, the styles or manners of presentation, the general principles or theories behind composition or speech. The second part of the method was the presentation and analysis of models or exemplary speeches. The third part wove the learning products of the first two phases together to form a speech appropriate to the requirements of a given situation or subject.

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WILLIAM KILPATRICK

William H. Kilpatrick (1871–1965) was a prominent educational thinker in the early and middle twentieth century who was responsible for introducing the activity curriculum and problem-solving style of teaching into the American school system. He became

known in the field of education as the primary architect of the project method; however, it is often overlooked that Kilpatrick was one of the principal activists during the turn of the century in that his program contributed to the shift from a foundation in creationism to one of evolution. Kilpatrick's method of teaching has a good deal of its origins in the philosophy of John Dewey, who, in his book *How We Think* (1933), argued that the processes of thinking and that of learning are inseparable. Anecdotal evidence suggests that Kilpatrick was an outstanding teacher and had a profound influence on the very people who were to help both the moral and intellectual capacities of youth—the teachers in the classroom (Tenenbaum 1951). One of Kilpatrick's most influential publications was an article written in 1918 called "The Project Method." In this article, Kilpatrick proposes that schools should set subject matter aside (e.g., mathematics, the sciences, history, geography, language) and focus their attention on students' character and personality traits.

HISTORICAL BACKGROUND

Born in White Plains, Georgia, in 1871, Kilpatrick was the first child of the Reverend Dr. James Hines Kilpatrick and his second wife, Edna Perin Heard. Kilpatrick was greatly influenced by the stern character of his father and the more gregarious, yet balanced disposition of his mother. He gained a strong educational background at an early age. In 1888, Kilpatrick enrolled in Mercer University in Macon, Georgia, his father's alma mater. Although not overly expressive as a child, Kilpatrick had become increasingly innovative in his formative years. Charles Darwin's *On The Origin of Species* (1859) had a profound influence on the young Kilpatrick. Eventually, he rejected the religious orthodoxy that had once played a significant role in his childhood. Kilpatrick's time pursuing graduate study at Johns Hopkins University only intensified his rejection of religious dogma. Kilpatrick was also influenced by Francis Parker, an educator and philosopher who was well versed in the philosophical works of Johann Pestalozzi, Johann Herbart, and Friedrich Froebel (Beyer 1997).

Kilpatrick returned to Macon as a mathematics professor at Mercer University in 1897. Kilpatrick's prominence at Mercer University, a religiously oriented institution, made a number of Mercer administrators feel uneasy because of his religious skepticism. In 1898, he met John Dewey at a summer institute at the Uni-

versity of Chicago, where he enrolled in a course with the well-known philosopher, a course that was described by Kilpatrick as “disappointing.” In Macon, Kilpatrick served as vice president of Mercer University from 1897 to 1899 and served as an interim president in 1904. Antagonistic sentiment forced Kilpatrick, an outspoken challenger of religious dogma, to resign from Mercer University in 1906 (Beyer 1997).

Both concurrent with and subsequent to his time at Mercer University, Kilpatrick worked as a teacher and served as a principal at a public school in Blakely, Georgia. With an interest in formal pedagogical theory and practice, Kilpatrick audited two courses with two professors, Percival R. Cole and Edward L. Thorndike, both from Teachers College, Columbia University. Kilpatrick subsequently moved to New York to study and eventually become a professor at Teachers College, an institution that had a profound impact on his work and served in sharp contrast to the more parochial atmosphere of the locale of his former academic appointment. Kilpatrick had become dissatisfied with the nature of subject matter knowledge instruction—so much so, that he shifted from a concern with what was to be taught to how learning takes place. His interests, then, centered on form rather than content. Kilpatrick was not so much interested in the emphasis on what was to be taught, but how learning was to take place. His earlier disappointment with Dewey changed in New York. There, Kilpatrick became an advocate of Dewey’s work, and expanded on Dewey’s notion of the activity curriculum (Beyer 1997). At Teachers College, Kilpatrick developed his education curriculum, and became what Kliebard (1986) argues as the “most popular professor in Teachers College history” (p. 159).

Kilpatrick retired from Teachers College in 1938. However, his recognition as a profound educator and theorist only heightened. He was one of the founders of Bennington College in Vermont and served as president of the New York Urban League from 1941 to 1951. Kilpatrick died on February 13, 1965. Yet his legacy as an educator lives on to this very day.

THE PROJECT METHOD

In order to fully grasp Kilpatrick’s Project Method, it is necessary to understand what it proposes. First and foremost, the Project Method diminishes the level of importance that schools attribute to subject matter knowledge, namely the emphasis on content related to

mathematics, history, the sciences, language, geography, the social sciences, and so forth. Instead, the Project Method proposes that school outcomes should focus on both character and personality traits. In his book, *Philosophy of Education* (1951), Kilpatrick states:

The aim and process of teaching as now best conceived differ significantly from what formerly prevailed—and, as we have seen, still largely prevail in high school and college. In the older outlook the almost exclusive teaching emphasis was, and is, on imparting knowledge. In the newer outlook the emphasis is on helping to develop desirable, inclusive character and personality, with especial regard to the dynamic quality of such a character. Does the person being taught grow as a total personality? Does he grow, as a result of the teaching, more sensitive to possibilities inherent in life around him so as to seize upon these fruitfully? Does he grow more disposed to take hold effectively to bring things to pass? Does he meanwhile become practically better informed and wiser about such matters as he works with? Does he become more creative in his approach? Does he grow in the tendency to consider thoughtfully what he does? Has he adequate knowledge from present and past with which so to consider? (p. 300)

This passage clearly illustrates what Kilpatrick believed to be the appropriate order of priorities of education. It is also noticeable that character and disposition is discussed first and knowledge of content is discussed last. For Kilpatrick, knowledge is the means to reach good character—the ends.

In addition to the hierarchical nature of the components of learning, Kilpatrick believed in the notion of wholeheartedness. That is, the student is completely involved in what she is doing. The complete, or wholehearted act is the fundamental unit of living a worthy life. This outlook is analogous to the overarching Socratic maxim that an examined life is one worth living. The curriculum that Kilpatrick devised became a series of tasks that benefited students. The following are the types of projects associated with Kilpatrick’s method:

1. Where the purpose is to embody some idea in external form, for example, to present a play or build a boat;

2. Where the purpose is to enjoy some aesthetic experience, for example, listening to a story or a symphony;
3. Where the purpose is to straighten out some intellectual difficulty, that is, to solve a problem;
4. Where the purpose is to obtain some item or degree of skill or knowledge (Kilpatrick 1918, 333–34).

Accordingly, Kilpatrick's philosophical perspective on education seemed to be in sharp contrast to the educational thinkers of the tradition of Jean-Jacques Rousseau. In fact, Kilpatrick, along with his mentor Edward L. Thorndike, was a rather harsh critic of the work of Maria Montessori, whose educational program focused on the intellectual development of the young child, oftentimes at the expense of social development.

In terms of teaching method and style, Kilpatrick was mostly interested in "wholeheartedness." This increasingly became his *sine qua non* for teaching practice. That is, the teacher's role was to focus attention not on what the student learns, but how the student is involved in the learning process. His goal for teachers was to identify the appropriate character and disposition of students for the maximization of learning.

SUMMARY OF CONTRIBUTIONS TO EDUCATION

Kilpatrick's general educational program has been a staple of the schooling and educative process in the United States and abroad for several decades. To be sure, for the most part, content knowledge has not been the priority for schooling in the early years. Rather, personality and character traits take precedence over content knowledge with younger students. Content becomes increasingly significant during the elementary school years, and later in the middle and high school years. Kilpatrick found the learning of content to be futile for young children if they do not have the wherewithal to know how to live a worthy life. At the same time, critics, many of whom are cognitive scientists and developmental psychologists, have argued in favor of content knowledge to a certain extent. Tapping a child's knowledge of a subject can provide very telling evidence of the processes of intellectual development.

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JOHN LOCKE

John Locke (1632–1714), an important English philosopher who developed strongly founded and well-substantiated arguments in support of the empiricist tradition, was a physician and academic by profession. Locke was clearly influenced by the so-called renaissance of science and inquiry. Locke was a contemporary of the renowned physical scientist and mathematician, Sir Isaac Newton, and was highly influenced not only by Newtonian mechanics, but by the novel approaches of English academics and philosophers of the time—most importantly, Sir Francis Bacon (1561–1626). Bacon in particular was outspoken about the need for change in the perspective and outlook of the methodological approaches to the sciences, which were, for the most part, ignored or censured centuries earlier. Locke's philosophical program included the methods of experimentation put forth by Newton and certainly Francis Bacon before him.

LOCKE'S NEWTONIAN VIEW OF LEARNING

In parallel with Newton, who devised cogent methodologies (most importantly, experimentation) for finding evidence in physical scientific phenomena, Locke applied a number of these very methods to the psychological sciences, which, in turn, had vast implications for the development of human learning. Locke devised a program in which an experi-

menter would be able to determine an individual's knowledge of reality through sense perception. A wooden table, for example, possesses characteristics that, through the senses, can be construed as real phenomena (a point that is challenged by subsequent philosophers who have espoused the rationalist tradition)—such as hardness. Moreover, data can be collected to indicate the verity of hardness as applied to wooden tables. These data are derived from a sample of individuals who are tested to determine characteristics of an object (such as hardness) through their sense of touch. In short, Locke's program emulates the Newtonian model in that it is applied to psychological rather than physical phenomena.

In 1690, Locke completed and published his well-known work, *An Essay Concerning Human Understanding*, soon to be followed by another important work, namely, *Some Thoughts Concerning Education*, written and published in 1693. In these works, Locke challenged the view that humans enter the world with many predetermined ideas and skills. Employing his empiricist position to philosophical problems and to the development of human thinking, Locke believed that humans are born as “blank slates,” a term Aristotle had coined, and which Locke expounded upon in *Some Thoughts Concerning Education* nearly two thousand years later. In Locke's view, individuals have the potential to develop any ability or personality trait depending on how they are influenced by the world. Locke, then, believed that children are born neutral and society, or some other external force, molds them. That is, young humans are blank tablets on which society and the local environment write. This, in turn, is the mechanism (to use a term associated with the work of Isaac Newton) for human development and learning.

EMPIRICISM AND THE REDUCTIONIST APPROACH

Although not the first to hold this view, Locke's position became known as the empiricist approach because its application to child development suggests that all human knowledge and understanding is based on sense perception. This model can be associated with characteristics that are believed to describe human nature. Through this position, humans are seen as passive and reactionary entities that are intrinsically at rest until they react to external stimuli. That

is, some external element must have the authority to “make humans think.” In the Lockean worldview, the environment in which one lives is the primary element that fosters an individual's learning—the environment is the nurturing device for development. Moreover, Locke believed that humans acquire a copy of reality when they set out to gain knowledge; that is, humans internalize facts and concepts that are brought to them from the outside world and react to these ideas in various ways.

Locke's view on learning and knowledge has been viewed by many subsequent philosophers and psychologists as reductionist in that it implies that humans are seen as wholes that can be divided into individual components, much in the same way that a computer or washing machine can be reduced to individual parts. To use a metaphor, Locke believed that it is possible to understand human nature by “breaking” humans into component parts. By repairing the parts, we then can repair the person. In sum, the main question in Locke's program is: How can we manipulate the environment in order to alter human development and learning? Locke's position, however, differs from the nativist (or materialist) position in that the Lockean worldview is based on sense perception and not the notion of innateness or that humans are prewired at birth.

LOCKEAN CONTRIBUTIONS TO PSYCHOLOGY AND EDUCATION

Locke's arguments have been vehemently criticized by a number of subsequent philosophers, such as Jean-Jacques Rousseau (who was born approximately two years prior to Locke's death) and Immanuel Kant who, during the late eighteenth century, argued against Locke's *tabula rasa* view of the young child's knowledge. On the other hand, numerous philosophers and psychologists even to this present day have espoused Locke's philosophical position on education—particularly the ways in which humans form knowledge bases. To be sure, Locke's associationist model has been emulated by many philosophers and researchers and can be identified as a model for the behaviorist (and pre-behaviorist) research of Edward L. Thorndike and, subsequently, B. F. Skinner. While Locke and other philosophers viewed associationism as the connection between two or more things possibly having a causal relationship, the nineteenth- and twentieth-century

associationists viewed associationism as the connection between the external environment and one's actions—a highly experimental approach to the discipline of psychology. This approach has had a tremendous influence on the various subfields of education. For example, through positive or negative reinforcements, the teacher can have great impact on each student's subsequent behavior within the learning experience.

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MARIA MONTESSORI

Maria Montessori (1870–1952), often considered one of the greatest thinkers in education, was one of the few developmental theorists who were actually involved in the teaching of children. Her contributions to both the theoretical and pragmatic approaches to education make her one of the most preeminent educationists in modern times. In addition to her writings, she developed numerous types of objects or manipulatives for the purposes of learning and instruction. Montessori's following grew considerably during her lifetime and continues to grow even to the present day with thousands of schools throughout the world that follow more or less her methods of instruction. Her own theoretical positions aside, Montessori was a profound lecturer on the pedagogical implications of the work of the philosopher Jean Jacques Rousseau and, later, of Jean Piaget. Beyond her contributions to education, Maria Montessori will be known for generations to come as the first female physician of Italy.

HISTORICAL BACKGROUND

Born near Ancona, a province in Italy, in 1870, Montessori came from a rather affluent household.

Her father was a successful civil servant who, like most men at that time, had a quite traditional perspective with regard to the role of women. In contrast, her mother was quite supportive of her daughter, and asked her to pursue her interests. Montessori followed her mother's advice, and became well known for her accomplishments as the first female physician in Italy.

Montessori's initial interest in education stemmed from her expert knowledge of the human body and its different systems. From this breadth of knowledge, she had become particularly interested in working with mentally retarded children. As a specialist in pediatrics and psychiatry, Montessori was appointed director of a school for mentally retarded children in 1901, where she installed a program to teach them to care for themselves and their environment. Montessori was influenced a great deal by the physicians Jean Itard (1802) and Edouard Seguin (1895), whose work convinced her to develop a scientific approach to education, based primarily on observation and experimentation. By 1903, a number of her students were able to pass the standard tests given by the public schools. She felt that given the right environmental conditions, children with mental disabilities could be taught and possibly lead healthy and productive lives. Montessori's interest in Seguin stemmed from his finding that mentally retarded children generally learn best when stimulated through the senses. Through Itard and Seguin, Montessori embraced Rousseau's philosophical perspective on human learning—that is, humans are born good, and environmental and societal conditions will affect the development of young children.

Shortly after her initial experiences as a director of a school, Montessori began coordinating a series of day care centers for children of working class households in the poor districts of Rome. Montessori concluded that young children between the ages of two and five were fascinated by the cognitive devices (i.e., manipulatives) she had developed. They were also involved in the learning of practical living skills. The older children would eventually help the teacher with the younger students—this general practice is an important feature in the modern Montessori classroom. By age four, most of her students were reading, writing, and performing four-digit mathematics calculations. From these observations,

Table 30.2 **Montessori's Sensitive Periods with Relation to Age**

Age Interval (in years)	Sensitive Periods					
	Order	Detail	Hand Use	Walking	Early Language	Conventional Language
0-1	✓				✓	
1-2	✓	✓	✓	✓	✓	
2-3	✓		✓		✓	
3-4			✓			✓
4-5			✓			✓
5-6						✓

Source: Adapted from Crain (1992).

Montessori concluded that children were equally happy to engage in both learning and play.

Montessori's method waxed in popularity in Europe at the turn of the century, and by 1912, had become a success in the United States. By the beginning of the 1920s, Montessori's pedagogical method fell into disrepute, particularly with the critiques of several educational psychologists like William Kilpatrick (1914) and Edward L. Thorndike (1932), both from Teachers College, Columbia University. While interest in educational theories in associationist psychology rose in popularity, the acceptance of the Montessori method, despite its earlier successes, had begun to wane. Kilpatrick wrote a critique of Montessori's methods, describing them as insensitive to the social needs and development of the child. Moreover, he believed that her materials lacked a sense of differentiation and did not allow for creative expression on the part of the child. Thorndike, too, was a leading critic of the Montessori method, and any other method or theoretical position emphasizing intellectual development at the expense of social development and personal hygiene in the early years. Nevertheless, despite overwhelming criticism, Montessori's method was not without merit in terms of the way her program and materials helped shape young children's thinking and competencies. Although Montessori's contributions were seen as too radical and idealistic, a revival of her program took place in the 1960s and became increasingly accepted ever since.

THEORY OF DEVELOPMENT: SENSITIVE PERIODS

Unfortunately, the popular press has underscored Montessori's contributions to educational practice

while disregarding for the most part her contributions to theory and research. Nevertheless, since the 1960s, her theoretical position has been aptly studied and examined. Possibly due to her commitment to the Rousseauian tradition, a large part of Montessori's theoretical position anticipates several theories of intellectual development—for example, the contributions of Heinz Werner, Jean Piaget, and even those of Noam Chomsky. In line with Chomsky's universal grammar (1957), Montessori believed that human intellectual or cognitive development is to some extent genetically programmed. So, although young children learn by actively engaging with their environment, general cognitive tendencies are seen to be predetermined by nature. With regard to the work of Werner and Piaget, Montessori emphasized the growth of humans within particular stages of development.

The concept of sensitive periods of development plays an essential role in Montessori's writings. According to Montessori, sensitive periods of development are genetically determined, and occur during critical times during early childhood when children are engaged in painstaking efforts to master certain tasks. These periods include predisposition to order, detail, hand use, walking, and language. Although Montessori clearly distinguishes between different sensitive periods, her identification of age ranges for each period is hazy. A somewhat general correlation of age and sensitive period appears in Table 30.2 and is discussed in the following subsections.

Order

The sensitive period for order occurs rather early in the child's life, as soon as he demonstrates bodily

movement. This period, which usually lasts until the end of the second year, is defined by the young child's insistence on the placement of various objects. To the young child, this placement is a form of order, which does not serve the same purpose as the meaning of order for adults. For example, the young child might cry when an object is placed in a location where it may typically not belong.

Detail

The sensitive period of detail occurs usually from twelve months to twenty-four months (two years) of age, and signals the point when a young child focuses on minute details of a particular situation or object. For example, an adult may place a large toy in a playroom. When the adult expects the child to play with the toy, the child's attention may instead be diverted to focus on a small piece of lint on the floor that may be situated near the toy. Adults find this behavior puzzling. This is yet another example that demonstrates Montessori's Rousseauian position that young children are not simply miniature adults, but instead think and behave in entirely different ways from that of the adult.

Hand Use

The sensitive period for the use of hands commences after the beginning of the first year and ends by age five, longer than any of the other sensitive periods. Shortly after twelve months, the young child increasingly makes use of the hands. The child grabs objects, puts smaller objects into larger ones, creates piles of objects, engages with things that open and close, and explores different objects through the tactile sense. From about three to five years of age, the child's touch becomes more sophisticated and he is able to manipulate new objects that at one time were difficult to handle.

Walking

Within the second year of life, the young child engages in her first walking experience. This period is perhaps the most visible to an adult because it begins with the child having a helpless appearance to one who is an independent active being. Given a much greater increase in mobility, the initial experience in walking allows the child to experience the world at

a much higher level than ever before. Here again, Montessori clearly emphasizes the Rousseauian philosophical perspective on human development. This can be identified through her differentiation between the child's reason for walking and that of the adult. The adult walks for the main purpose of moving from one destination to another. In contrast, the child engages in the task of walking for its own sake. Families with young children who live in two-story homes may often encounter a child continually walking up and down a staircase. For Montessori, this indicates the child's interest in perfecting the skill of walking, and not walking for some other purpose.

Early and Conventional Language

The fifth sensitive period has to do with the development of early language. Adults often underestimate the complexities involved in learning language and how quickly the young child masters it. The child must learn not only the vocabulary of the language but the grammar that sets the vocabulary in a more effective framework for communicating with others. Due to its elusive nature, researchers and educators have had a difficult time understanding the role that language plays in children's intellectual development. This problem is very similar to our current challenges in understanding brain behavior. Nevertheless, children master vocabulary and grammar with little if any difficulty. Montessori also posited that children of households where more than one language is spoken master each language.

Adults who appreciate the challenges that children must encounter in order to learn find it perplexing to learn that grammar comes quite easily for young children. While the adult must pay great attention to rules and syntax when learning a new language, the young child does none of this—learning almost unconsciously. Here is where Montessori's writings seem to anticipate the work of Chomsky. She argues that young children have a built-in mechanism that allows them to absorb language without memorizing terms, learning syntax, or anything an adult is required to do to acquire a new language.

Montessori was clear about the importance of cognitive development within the first three years of life. From birth to the age of 2 ½ or 3 years of age, the child is equipped with what she needs in order to absorb the language or languages spoken in her

environment. Montessori goes on to say that adults find it quite difficult to imagine what the child is experiencing at this point. After the three-year mark, this aptitude tapers off, and the child will no longer have this innate ability. Montessori believes this innate, maturational ability occurs for all children, regardless of environmental conditions. In addition, the progression of learning a language is consistent—the child begins with babble, continues to learn single words (vocabulary), moves on to strings of two words, three words, and eventually whole sentences.

Montessori also posited that each level of language learning is not gradual. Instead, the young child learns a language in spurts; that is, for a long period, the child may not be demonstrating any progress until a certain moment where he begins to say several new words, strings of words, or semi-complete syntactically accurate sentences. Although the sensitive period for language lasts for approximately six years, Montessori identifies a transition between two language periods. In Table 31.2, the sensitive period for language is divided into “early language” and “conventional language,” where early language, discussed above, occurs from birth to about three years and conventional language occurs from three years to approximately six years of age. In contrast to early language, in the conventional language period the child is completely conscious when learning new vocabulary or grammatical structures.

MONTESSORI'S CONTRIBUTIONS TO SCHOOLING

In the Montessori tradition, since a large number of children do not enter school until 2 ½ to 3 years of age, parents and caretakers are essentially the first educators. Montessori believed that in order to help young children's cognitive structures, parents need a positive attitude. This is not done by ignoring children's interests or by directing the learning process. Instead, parents need to provide opportunities and environments for children that are conducive to learning and which will allow adults the occasion to observe children's everyday, spontaneous interests, inclinations, and motivations. Now that 2 ½ years have passed, the child may be ready for the Montessori school.

The representative Montessori school generally enrolls children between the ages of 2 ½ to 6 years

of age, when most of the sensitive periods are still maturing and developing. In addition, Montessori did not mind mixing children of different ages because they tend to interact in ways that foster cognitive and social development. Within the Montessori school, a number of factors are found that are starkly different from the typical early childhood (grades K through 2) setting in the elementary school.

The first factor has to do with the child's independence. In general, elementary school children have little if any independence—they are told where to sit, when to ask questions, and when to leave their seats. With regard to content, children are often involved in drill and practice, instructed and told what to read or to say, and even engaged in recitation. In contrast, the Montessori school emphasizes the child's independence. Montessori argued that in order to stimulate vitality during the sensitive periods, the school must have the appropriate materials so children will engage in activities (often times without the assistance of an adult). In order to determine which materials were most suitable for the classroom, Montessori observed children in their everyday setting within the school. The materials which seemed to engage children the longest and which demonstrated children in total concentration were those that were used within the classroom. Based on one of her initial observational findings of children's concentrative efforts, Montessori developed cylindrical blocks ranging in size that fit into their respective holes in a large wooden block. Montessori implemented building blocks in her program as a means of developing geometric thinking and reasoning in the early years. Unlike earlier educators, Montessori instilled an element of free choice in her method of facilitating young children's learning. Through her method, children developed ideas of various geometric figures (e.g., circles, rectangles, triangles, ellipses, trapezoids, rhombuses, hexagons, and so forth) through exploratory activity. This is not to say, however, that her exercises and activities for children were deprived of structure; in fact, the Montessori method contains nearly 400 pages of sequenced lessons that are to be balanced with the child's free choice activities. She found numerous children engaged in the process of finding the appropriate holes for each of the different sizes of cylinders. Montessori observed that after several repetitions of a particular activity, the child would develop a sense of satisfaction and

pleasure when accurately solving a problem using any of the materials. This was the point that Montessori referred to as *normalization*.

Montessori also emphasized children's rights to select the materials with which they wish to engage. For Montessori, this meant that the child would have a more productive time reaching the point of normalization. Most very young children will engage in activities in which attention to order or detail is evident, whereas children between ages 2 and 4 will most likely be engaged in activities which are associated with drawing (hand use) or writing and reading (hand use and language). Given the emphasis on children's independence, concentrative efforts, and free choice, reward and punishment is unnecessary in the Montessori school. Montessori felt that in the general elementary school, children become submissive to the adult, almost to the point that they will say and do anything for approval from the teacher. This process, then, limits children's ability to think independently. Instead, the Montessorians refrain from telling children what to do through reward and punishment, and instead provide them with the environment in which they are able to select their own materials and work independently or in collaboration with others.

It is frequently the case that young children wish to tie their own shoes or button their own clothes appropriately as a means of seeking greater independence from the adult. In anticipating young children's motor skill development, Montessori devised several subskills that prepared young children for some of the major tasks they would choose. In helping them build their dexterity for such fine motor tasks as tying shoelaces, Montessori prepared young children with subskills that included the proper holding of a crayon or pencil for the purpose of writing or drawing and even the washing and cleaning of fruit and vegetables.

In addition to issues of independence, free choice, concentration, rewards and punitive measures, and motor skill development, the Montessori school also includes childhood preparation in the areas of reading, writing, and (as seen above) arithmetic and geometric thinking. Montessori believed that the most favorable time to introduce these subjects is no later than 4 or 4 ½ years of age because it is at this time when the sensitive period for language is at its peak. Once the peak has passed, say, by ages 6 or 7, it will

be more difficult, according to Montessori, for the child to develop skills in these areas.

In her writings, Montessori also discussed the issues of moral misconduct, fantasy, creativity, and nature as educational devices. Moral misconduct, as Montessori asserted, results when the child's engagement in work or play is unfulfilled. Unlike the traditional classroom scenario where the teacher gains complete external control of behavior, the Montessori teacher emphasizes internal control by the child. The teacher instead engages in student observation to identify materials and activities that suit individual students. In addition, students learn respect for neighbors as opposed to merely being told to stop a bad behavior.

Montessori often emphasized that adults must learn to follow children's natural inclinations. She went on to say that one of these natural inclinations is fantasy. Montessori argued that children at first believe in the content of stories because they are unable to distinguish between a fantasy and reality. However, she believed that fantastic events and storytelling eventually leads the child to the ability to discriminate between the two. Further, children's involvement in creative tasks like painting and drawing alludes to some form of reality in the child's life, and is therefore a necessary component of the Montessori curriculum. Nature, too, plays an important part of the Montessori curriculum. For Montessori, the outdoors stimulates the young child perhaps more than any other environment. The young child has a much stronger predilection toward things in the natural environment than the adult does, and will often exhibit greater attention and patience when engaged in naturalistic activities outdoors than in a number of indoor activities, most of which are unnatural and contrived.

Montessori's contributions in education do not merely span the early childhood years (birth through five or six years of age), that is, the full durations of each of the sensitive periods. Montessori also wrote extensively on children in the elementary years (approximately six to twelve years of age), and to some extent, the adolescent period. Her primary goal with elementary school age students was the development of intellectual capacities as well as the child's outlook on the external environment. Montessori urged teachers in

these age levels to emphasize student questioning and research for finding answers. She developed a curriculum called the “cosmic plan” which consisted of stories on important subjects for growth, such as the origin of life, why (and how) plants and animals grow, how buildings are constructed, and so on. Montessori believed that as children grow and become young adults, their involvement in responsible tasks, such as balancing household budgets, working on the farm, or working in a maintenance position will prepare them adequately for the real world.

MONTESSORI’S INFLUENCE IN TODAY’S SCHOOLS

Montessori has influenced schools of the late twentieth and now the twenty-first century, even in the non-Montessori elementary school. As stated above, the Montessori method has seen a number of revivals, particularly in the United States during the 1960s and 1970s. Educators in the United Kingdom and Australia have also seen the effectiveness of the Montessori school. Presently Montessori schools can be found in numerous countries throughout the world, mostly in many East Asian countries (e.g., Taiwan and Japan). The late twentieth-century revivals were most likely in response to the need for alternatives to the typical nursery or elementary school systems, which limited student autonomy and did not seem to serve critical points within early childhood. It was also during these decades when Piagetian theory became prominent in the United States. And, as indicated above, Montessori’s theoretical framework seems to have anticipated the work of Piaget and other developmentalists in early childhood.

Nevertheless, Montessori also had her share of critics. Her approach was seen as radical by a number of behaviorist theorists and advocates who put social development well before cognitive or intellectual development. Thus, Montessori’s critics seemed to have greatly influenced the educational panorama for the first several decades of the twentieth century, and although her methods are quite popular today, the educational system in the United States and in most other countries favor teacher-centered classrooms, whereby students are directed and instructed and have virtually no free choice at all. Regardless of her shortcomings, Montessori was one of the first

theorists and practitioners to put the philosophical perspective of Rousseau into practice. In addition, unlike the famous theorists who succeeded her, Montessori was perhaps the first to recognize the spontaneous capabilities of young children and appreciate the relationship between these capabilities and intellectual development in general.

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JOHANN HEINRICH PESTALOZZI

Johann Heinrich Pestalozzi (1746–1827) is one of the most widely renowned educational thinkers of the late eighteenth and early nineteenth centuries. His influence is noticed in the works of later educational theorists and practitioners including Friedrich Froebel, Johann Herbart, and William Kilpatrick, as well as present day educational researchers. Although Pestalozzi is referred to frequently in educational circles, his ideas in general are obscure, partly because his writing style is somewhat complex. Nevertheless, if it were not for Pestalozzi, numerous common practices in education today would seem more like novelties than norms. For example, Pestalozzi was one of the primary architects of whole class instruction (in contrast to tutorship—the com-

mon pedagogical setting of his time). He is also recognized for promulgating the use of slates and pencils. In addition, Pestalozzi is credited for the well-known “object lesson,” which today is often construed as a lesson in which students, through the use of objects, learn from modeling, and subsequently emulate or replicate a given cognitive task. In general, Pestalozzi can be credited for a number of educational practices that have been inculcated into an educational system still in place today in almost every post-industrial nation.

HISTORICAL BACKGROUND

Pestalozzi was born in Zurich, Switzerland, in 1746 to a middle-class family. His mother was Susanna Hotz Pestalozzi and his father, Johann Baptiste Pestalozzi, was a physician. Pestalozzi seems to have been influenced to some extent by his grandfather, Andreas Pestalozzi, a Protestant minister in the rural village of Hongg, who embarked on an undertaking to improve conditions for Swiss peasants.

Pestalozzi apparently led a somewhat unstable childhood in the sense that he was overprotected by his parents, particularly his mother (DeGuimps 1895). Nevertheless, as a resident of Zurich, Pestalozzi was influenced by a number of movements in the mid-eighteenth century. For example, through the Collegium Carolinum in Zurich, he was introduced to the work of Johann Breitinger, a scholar of classics, and Johann Bodmer, an expert in Swiss history. Pestalozzi was brought up in a pre-industrial world that had witnessed the malevolent effects of early industry on farmers and skilled craftspeople. As DeGuimps (1895) noted, Pestalozzi, along with other youth of his day, boycotted the burgeoning industrial movement by sleeping on bare ground and eating nothing but bread and vegetables in contempt of the materialistic agenda of early industrialists.

Pestalozzi, like other young and educated individuals of his day, studied for the ministry, but failed to complete his theological studies. Instead, he decided to turn to farming as a means of sustenance and happiness and, in 1769, Pestalozzi married and settled on a farm at Neuhoff near Zurich. As an agriculturalist, Pestalozzi gained his initial experience in educational practice. At Neuhoff, he employed young individuals who had mostly been orphaned or born into peasant families. In challenging the nascent in-

dustrial movement, Pestalozzi established a self-supporting agricultural and handicraft school on the Neuhoff farm in 1774. It was at this time, between 1774 and 1779, that Pestalozzi developed the idea of simultaneous instruction, in which he taught the farm hands reading, writing, and arithmetic, sometimes nearly fifty students at a time. By 1780, however, his business as an agriculturalist failed due to lack of funding. As a result, he turned to writing. He published his first book, *Leonard and Gertrude*, in 1781 (published in English in 1801), in which he outlines his ideas about pedagogy, and concluded that his role in life was to be an educationist. He was highly influenced during this time by the well-known philosopher Johann Gottlieb Fichte, who was interested in establishing a regeneration of the German state through a proper education (DeGuimps 1895).

Although his efforts at Neuhoff failed, Pestalozzi pursued teaching again in the city of Stanz, where he established a school for homeless children in 1798. This venture, like the one at Neuhoff, did not prove successful, but his major opportunity came in Burgdorf, from 1800 to 1804, when he developed a philosophical and methodological approach to pedagogical technique. He then opened his Institute at Yverdon in 1805. By this time, Pestalozzi had reached the peak of his career, attracting numerous individuals throughout Europe as students of his institute, one of them being Friedrich Froebel. Pestalozzi died in 1827.

NATURE AND THE LINK BETWEEN CONCRETE AND ABSTRACT

Pestalozzi identified human nature with the natural world. That is, he believed people behaved according to unalterable laws, almost in a similar tone to Sir Isaac Newton who had identified physical laws nearly a century earlier. However, unlike physical laws, the unalterable laws of humans have to do with the course of cognitive development. For Pestalozzi, *Anschauung*, or intuition, underlies all elements of cognitive process from the early stage of sense perception to the later stage of full cognitive awareness of a concept. In sum, the entire intellectual process starts with an obscure and possibly confused experience to a clear and definite cognition.

Pestalozzi believed that form, number, and language are the three elementary conduits for instruc-

tion. This is because the entire sum of the properties of any object was comprised of its appearance (form), its quantitative characteristic (measurement or number), and the elementary grammatical and syntactical structures involved in discourse (language). For example, any object considered must have a spatial orientation of some kind. The question is: Can the object be represented in simpler terms, namely, by breaking it down to simpler forms, like a rectangle or a line? Further, we can discern the specific object from other objects through the process of measurement. This is how the element of number is involved. For Pestalozzi, form and number are symbiotically related. That is, what we see (form) can be quantifiable through measurement (number); likewise, the reverse is also true—if we can measure something, then we can conclude that it has spatial characteristics and therefore can be seen. Next comes language, how we learn it and how we use it to discuss objects or to communicate. Pestalozzi used phonemes and syllables as units of language. He expounded on these units and developed elaborate systems of instruction that led to the child's learning of combinations of speech sounds and syllables, to words and phrases, and then to complete sentences.

THE OBJECT LESSON

In understanding Pestalozzi's philosophical program for education, it is not very difficult to identify the influence of both John Locke and Jean-Jacques Rousseau, individuals with two opposing philosophical views. For Locke, the foundation of what we as humans know has to originate with the senses. In seeming agreement with the Lockean perspective, Pestalozzi argued: "When I now look back and ask myself, what have I specially done for the very being of education? I find I have fixed the highest, supreme principle of instruction in the recognition of sense impression as the absolute foundation of all knowledge" (1894, 200). Yet, at the same time, Pestalozzi was greatly influenced by the work of Rousseau. According to Soëtard (1981), Rousseau's well-known treatise on education, *Emile*, was Pestalozzi's bedtime book for most of his life. Despite his steadfast belief that sensory perception is the underpinning of knowledge, Pestalozzi also believed strongly in liberating childhood. By this, he meant that children think in ways much different from how adults view the

world, and he insisted on the Rousseauan belief that children are not merely miniature adults.

For Pestalozzi, then, the results of instruction were to be a clear and wholesome account of what was true, moral, and practical from an intellectual perspective. That is, the key to efficient learning had to do with a set of images or sensorimotor patterns of affect that could possibly stimulate the learner's interest and thought processes. Pestalozzi concluded that the teacher should be concerned with helping the student acquire a model, which would guide the process of trial responses. So, the concrete, spontaneous, and familiar objects of experience are what the student needs to develop and nurture his or her intuitions.

With a real, concrete object, Pestalozzi insisted that the object lesson be used to transform the student's thinking from sensory perception to one of abstraction and formal definitions of concepts with regard to the object being studied. The objects, then, were not the primary focus in the educational process; rather, the method of presentation was central and was to encourage the student's formation of concepts. The lesson would end with the formulation of a rule, a definition, or precept of a larger concept or idea. Pestalozzi's influence in this regard was far reaching in Europe and in the United States after his death. Individuals like Warren Colburn in mathematics and Lowell Mason in music based teaching techniques of their respective disciplines on Pestalozzi's object lesson.

PESTALOZZI'S LEGACY AS AN EDUCATIONIST

Pestalozzi and Comenius, a famous educationist a century earlier, had one most important thing in common: Both individuals' contributions to education were appreciated in posterity. Although both were well known during their own lifetimes, their contributions were seen more for their means rather than ends. Comenius was known in his day for his Latin picture books, yet his contributions to education that would come to seem far more important were his attempts at making education a universal enterprise. Pestalozzi, too, was known as an educator during his lifetime as an instructor and tutor of children of the middle and upper classes. But his contributions to education as a universal enterprise were recognized only posthumously. These contributions included a

philosophical program for instruction and assessment as well as a keen interest in educating underprivileged children.

Pestalozzi may also be seen as the father of the manipulative—that is, the hands-on object, which serves to connect informal, everyday, or spontaneous ideas with formal concepts and definitions. His influence in this regard is clearly discernable in later educational thinkers, from Friedrich Froebel in the early nineteenth century to Maria Montessori in the early twentieth century, to scholars of education in the present day whose research demonstrates an important positive link between the use of manipulatives and genuine learning.

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JEAN PIAGET

Jean Piaget (1896–1980) was a Swiss psychologist and genetic epistemologist whose contributions to research and practice are far reaching in nearly all educational domains. Piaget was born in 1896 in Neuchâtel, Switzerland, and died in that city in 1980. As a child, Piaget had a keen interest in biology, particularly Darwin's theory of evolution. In particular, Piaget was interested in how various species change through adaptation to varied environmental conditions. Piaget was a precocious child. At ten years old, he published his first scientific article on his observations of an albino sparrow.

During adolescence, Piaget was particularly influenced by one of his uncles, a philosopher. It was through his uncle that Piaget was acquainted with the field of epistemology, the study of knowledge and how we know what we know. Piaget's primary

philosophical influences were the works of Jean-Jacques Rousseau, Immanuel Kant, and Henri Bergson. Piaget attempted to reconcile the ideas of these thinkers with the Darwinian theory of evolution. After several years, Piaget invented a novel field known as genetic epistemology, namely, the origins of knowledge, particularly the origins of knowledge from the earliest periods of human life. Piaget's experiences in the biological sciences led him to believe that the nonempirical approach in philosophy (e.g., in the realm of Hegel and other Romantic philosophers) was unsuitable for determining the origins of knowledge. Instead, he proposed to combine philosophy with the empirical, scientific approach.

In 1917, at the age of twenty-one, Piaget completed his Ph.D. thesis (on the developmental changes of mollusks in Lake Lucerne) at the University of Neuchâtel. He subsequently worked in Paris for a few years on the development of intelligence tests (which were originally created by Alfred Binet). Although the purpose of the research was to develop norms and scoring for the test questions—determining the number of correct responses—Piaget was more interested in the errors children made and how their errors seemed to fit specific patterns at different ages. This led to his discovery that children's thinking was not at the adult level, but was nevertheless organized and had a form of logic of its own.

In 1921, Piaget became the director of the Jean-Jacques Rousseau Institute at the University of Geneva, where he remained for the rest of his life. The Institute was aptly named; Piaget was one of the first writers after Rousseau himself who followed Rousseau's philosophy on child development to such a great extent. Piaget followed Rousseau's belief that children who were allowed to follow their own course of development achieved optimal abilities as opposed to others who were not. Piaget, then, was an organismic thinker; he looked at the human as an organism acting on the world, and not simply a passive entity. He thought of the organism functioning as a structured whole entity, in which the whole is greater than the sum of its parts.

Piaget believed that children went through a sequence of reorganizations of their mental structures. This sequence of reorganizations, or systems of processing information, were distinctive from one another and led Piaget to think of development in terms

of stages. Piaget had become one of the most sensitive observers of children's behavior. He kept highly detailed accounts of systematic observations of his own three children over a period of several years. As a result, he discovered important features of infant and child development that other thinkers spanning centuries had overlooked.

Piaget rejected the basic behaviorist traditions of thinking, which were put forth primarily by American psychologists (for example, E. L. Thorndike and B. F. Skinner). Instead, he believed that children should develop at their own rates and learn things for themselves, whereas the behaviorists, who rejected age or stage differences, believed that it is possible to hasten development and make it more efficient with the appropriate conditioning techniques. Piaget's answer to the possibility of speeding development is the following: Anything you tell children (what most teachers do) will prevent them from the process of discovery on their own terms. If a child developed more slowly, thinking things through, that child would develop more adaptive, scientific, and logical abilities.

SCHEMES

Piaget's theory of intellectual development is founded on a basic developmental process that he posited was at work throughout the life cycle. Piaget called the basic unit of knowledge a scheme (the scheme in Piagetian terms is called schema [singular] and schemata [plural]. The terms "scheme" [singular] and "schemes" [plural] will be used here). A scheme is a pattern of behavior in which we know something or gain knowledge of something. It is the most basic structure in Piaget's developmental theory and is composed of our frame of reference. According to Piaget, it is impossible to know anything without a frame of reference or structure that serves as a means of processing incoming information. He therefore posits that, as humans, we are equipped with some basic schemes that are the foundations of future knowledge. We are born with three schemes that are forms of reflexive actions when encountering the world for the first time: looking, grasping, and sucking. The infant uses these schemes in an automatic and reflexive manner. These basic schemes, however, are modified over time and develop and expand into newer and more complex schemes.

ASSIMILATION AND ACCOMMODATION

The development of schemes throughout the lifespan unfolds through two key processes: assimilation and accommodation. Since we only know what we can process through prior knowledge (basic structure of constructivist philosophy), we apply our current schemes to a new piece of information from the environment and incorporate that new piece of information into our existing scheme. This is the process of assimilation, that is, the new piece of information is being assimilated into the preexisting knowledge base. Take the sucking scheme as an example. A baby has the reflex of sucking, and therefore sucks anything that is placed in her mouth. She may recognize a nipple (an old object) by sucking it. If she then places her finger in her mouth, she will apply the sucking scheme to the finger (a new object). An older individual may have developed a scheme for a dog—a four legged creature, usually with a long tail, that you find on a leash or running in a park. So, if the child sees a collie, he may apply the dog scheme and refer to the collie as a dog.

However, we are constantly in the process of modifying our schemes because no two situations or entities are the same. So, we must adjust the way we look at something, the way we move our lips or hold something when encountering a different object (e.g., sucking a nipple compared to sucking a finger). Although assimilation allows us to generalize and apply our knowledge to many different conditions, it distorts reality and does not adapt to it because assimilative processes defy restructuring and modification of schemes. At this point, the process of accommodation is necessary and serves as a complementary process to assimilation.

Accommodation is the process of reorganizing or modifying our current schemes to be able to handle new incoming information or changes with regard to an object or idea. In this respect, we adjust to reality instead of distorting it. It allows us to alter existing schemes so that they can be applied to more varied situations. Accommodation is not completely the process of modification of existing schemes; it can also involve the creation of new schemes as well. For example, the infant who sucks his finger may encounter a rubber duck. Since the sucking reflex will not yield the results for which the infant is search-

Table 30.3 The Four Stages in Piaget's Theory of Intellectual Development

Stage	Characteristics	Age Range
Sensorimotor	Schemas—which emerge from the innate processes of sucking, grasping, and looking—are associated with the development of motor skills. Learning initially takes place locally and through bodily functions, and subsequently becomes externalized.	Birth through 24 months (2 years)
Preoperational	As the child matures, learning takes place externally (i.e., learning is not primarily based on bodily functions, or interest in an activity through happenstance). The child is unable to succeed in tasks involving conservation and seriation.	2 years through 7 years
Concrete Operational	The child has the ability to succeed in tasks involving conservation, seriation, and some aspects of order relationships involving logic. The child, however, is unable to make abstractions about concrete situations. For example, the child might be able to determine the next number in a sequence, but might not be able to generalize about the sequence as a whole. More specifically, in the sequence 2, 4, 8, 16. . . , a concrete operational child might know that the fifth number is 32, but will more than likely not know that the general rule has to do with the power of 2.	7 years through 12 years
Formal Operations	The individual can think abstractly. The individual is able to make generalizations when given specific tasks. For example, when given that A is older than B, C is younger than A, and C is older than B, the individual will be able to generalize that $B < C < A$.	12 years to adulthood

Source: Stephen J. Farenga and Daniel Ness. Adapted from (1) Piaget, Jean (1926). *The Child's Conception of the World*, trans. J. Tomlinson and A. Tomlinson. Savage, MD: Littlefield, Addams; (2) Inhelder, Bärbel, and Jean Piaget (1964). *The Early Growth of Logic in the Child*. New York: Harper and Row.

ing, he may decide to bite the rubber duck instead. This is evidence of an entirely new scheme. Likewise, the older child who refers to a cat as a “dog” because “it has four legs and a long tail” will be told by an adult that the animal does not belong in the “dog” family and is therefore labeled “cat.” The child at this point must reorganize his knowledge of animals in such a way that he differentiates between dogs and cats. Assimilation also allows us to generalize between different phenomena and to develop a sense of classification.

Piaget's complementary processes of assimilation and accommodation refer to the system of equilibration. For Piaget, as living organisms, we desire equilibrium. As a result, we are always motivated to

assimilate and accommodate objects and ideas in our environment. Doing so leads to the state of equilibrium. When we are unable to assimilate or accommodate new objects or ideas to a full extent, we are instead in a state of disequilibrium.

THE STAGES OF DEVELOPMENT

As stated above, Piaget outlined four primary stages of intellectual development: the sensorimotor stage; the preoperational stage; the concrete operational stage; and the formal operational stage. One stage is intrinsically different from another due to the differences in cognitive levels within particular age groups (see Table 30.3).

Sensorimotor Period

The sensorimotor stage occurs from birth to twenty-four months (two years of age). The basic theme here is that the cognitive abilities of children in the sensorimotor stage are confined to tasks and skills associated with bodily reflexes within the first four months of life to the discovery of external objects in the next eight months and finally to the development of language abilities in the second twelve-month period. Again, all knowledge learned during this period is generated from the three innate schemes given at birth—looking, grasping, and sucking. The end of the sensorimotor period serves as the transition to the next period of development in which the infant is able to use mental symbols and words to refer to absent objects. Piaget refers to the origin and continued use of mental and written symbols as the semiotic function.

Preoperational Period

Children begin to use symbols when they use one object or action to represent or supplement an absent one—the sixth stage of sensorimotor development. Initially, the child uses nonlinguistic symbols, or natural language, prior to the learning of an artificial language (e.g., Arabic, English, Japanese). To illustrate natural language, a child might pretend that a piece of cloth is a pillow and go to sleep on the cloth. Perhaps more basic than this, a very young child will cry if she scrapes her knee while attempting to learn how to walk; the adult, on the other hand, will use artificial language to indicate pain from scraping a knee or elbow (“Ouch, that hurts! I’ll need to put a bandage on that.”).

A major source of symbols is language (artificial language), which develops rapidly during the early preoperational years (two to four years). Language vastly widens the child’s horizons. Through language, the child can relive the past, anticipate the future, and communicate events to others. But precisely because the young child’s mind is so rapidly expanding, it initially lacks the properties of a coherent logic. This is apparent in the young child’s use of words. He or she does not use words to stand for true classes of objects, but merely as precepts. For example, Jane, a three-year-old, has two brothers—Ron and Mike. She says, “My daddy has lots

of Rons and lots of Mikes and lots of Janes.” She does not yet possess the concept of a general class—children—within which those with the names Ron, Mike, or Jane comprise only a small subset. Because children lack general classes, their reasoning is frequently transductive, shifting from the particular to the particular: “I haven’t had my nap yet so it isn’t afternoon.”

Another characteristic of a preoperational child is his inability to conserve. Take the conservation of continuous quantities (liquids) as an example. A child is shown two glasses, A1 and A2, which are filled to the same height. The child is asked if the two glasses contain the same amount of liquid, and the child almost always agrees that they do. Next the experimenter (or the child) pours the liquid from A2 to the glass P, which is lower and wider. The child is asked if the amount of liquid is still the same. At the preoperational level, the responses fall into two substages:

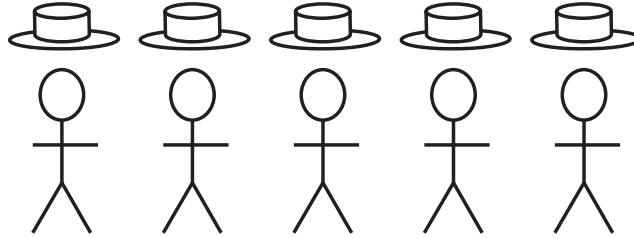
Substage I: The children clearly fail to conserve—that is, they fail to realize that the quantity is the same, e.g., “A1 has more because it is taller. . . .”

Substage II: The child takes steps toward conservation but does not achieve it. A boy might at one moment say that A1 has more because it is taller, then change his mind and say that P has more because it is wider, and then become confused. The child is showing “intuitive regulations”—beginning to consider two perceptual dimensions, but cannot reason the two dimensions simultaneously.

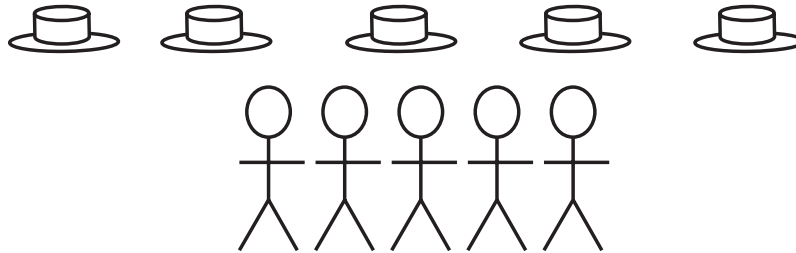
In another example of conservation, a child is unable to conserve number (better known as conservation of equivalence relations) if she is unable to distinguish between the number of objects present and the spatial arrangement of those objects: “I have four checkers and you have five checkers, but I have more because they’re spread out” A related number conservation task involves the use of a select number of small toy dolls and the same number of toy hats to go with each doll. If each hat is placed next to each doll, the preoperational child will undoubtedly agree that there are a same number of dolls and hats. However, if one group, say the hats, are spread apart, while the dolls are close

Figure 30.1 **Piaget's Conservation of Equivalent Relations Problem (Also Known As Conservation of Number)**

The typical preoperational individual will say that for every person there is one hat.



The typical preoperational individual will say that there are more hats than there are people.



Source: Stephen Farenga and Daniel Ness. Adapted from Jean Piaget's Task for the Conservation of Number. See Jean Piaget and A. Szeminska, *The Child's Concept of Number*, trans. Caleb Gattegno and F. M. Hodgeson. New York: Norton, 1941.

together, the typical preoperational child will say that there are more hats than dolls (See Figure 30.1). Other conservation experiments include conservation of substance, weight, volume, and length. Conservation of substance involves the use of clay or play dough. Two balls of clay are approximately the same size. One of the two balls of clay is rolled into a longer, thinner shape—like a hot dog. Preoperational children believe that the two objects have different amounts of clay. Seriation is another Piagetian task that allows a researcher to classify children into particular stages. Seriation involves placing objects of different lengths in order of size. Young children center on one aspect of the relationship of length. Concrete operational children are able to decenter, that is, they are able to take in two or more components of an idea or concept simultaneously (see Figure 30.2).

Concrete Operational Period

One can define children in the concrete-operational stage through comparison with children in the ear-

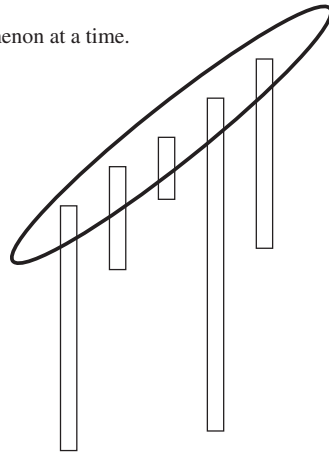
lier preoperational level. Concrete operational children generally can solve conservation tasks, seriation tasks, and are able to generalize to a greater extent than younger children. That is, their language capabilities generally increase and, they are therefore able to base their observations on real-life phenomena or concepts. They are able to deal with more than one component of a particular task simultaneously. Preconcepts generally disappear, and transductive thinking becomes more inductive in nature.

Formal Operations

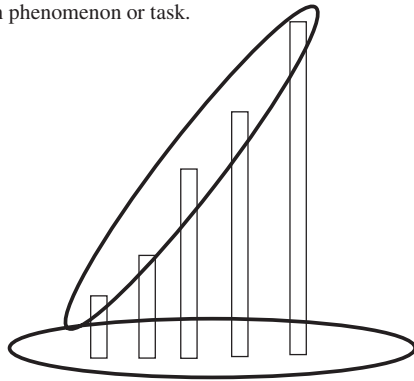
At the level of concrete operations, children's actions showed more organization. In one experiment, children were given four flasks containing colorless liquids labeled 1, 2, 3, and 4. They also were given a small container of a colorless liquid, labeled C. Their task was to mix these liquids to make the color yellow. At the level of preoperational intelligence, children typically were messy and disorganized. They poured the liquids in and out of the

Figure 30.2 **Unsuccessful Attempt (a) and Successful Attempt (b) in the Seriation Task**

(a) Centration—The child's attention is limited to individual characteristics of a given phenomenon at a time.



(b) Decentration—The child's attention broadens and includes most characteristics of a given phenomenon or task.



Source: Stephen Farenga and Daniel Ness. Adapted from Jean Piaget, *The Origins of Intelligence in Children*. New York: International Universities Press, 1936.

bottles haphazardly. At concrete operations, children's actions demonstrated more organization—a typical strategy was to pour C into each flask. However, they would then decide to discontinue the activity. When questioned, these children usually said that there wasn't anything more they could do. Thus, their actions revealed some organization, as we could have expected from their systematic behavior on conservation tasks. But they entertained only a limited range of possibilities.

At the level of formal operations, however, the adolescents worked systematically in terms of all possibilities when attempting to find the liquids that will make yellow. Some started out by trying

various combinations and then realized that they had better make sure that they would include all possible combinations, so they wrote them down before acting further. Formal operational individuals are able to generalize at a much higher level in that they seek patterns without having to observe the results. For example, in another task, a sequence of ten squares going from left to right will have the following colors—green, blue, red, green, blue, red, and so on. Formal operational individuals are able to determine the color of the thirtieth red square, the forty-first green square, the n th blue square, and so forth, by identifying patterns and writing them down.

PIAGET'S METHODS OF INQUIRY

Piaget utilized two prominent forms of data collection for the development of his research program: systematic observation and the clinical interview. Despite his vast body of literature, Piaget discusses the methods of systematic observation and the clinical interview only briefly in the introductory chapter of his book entitled *The Child's Conception of the World* (1960).

Systematic Observation

For Piaget, the method of observation was perhaps the only way to tap into the development of organisms that do not possess any form of language capacity (i.e., speaking, reading, or writing). Infants, of course, would be categorized in this manner. Piaget's well-known observations (what he referred to as "pure observation") were with his own three children (Lucienne, Jacqueline, and Laurent). Piaget kept painstakingly extensive records on each one of his children as infants and young children—a process which took the course of several years. It was during this period (1930s) that Piaget developed a thorough progression of the cognitive development of infants. At this time, he discovered the six substages of the sensorimotor period of intellectual development.

Clinical Interview

Piaget used the clinical interview for a number of purposes. Perhaps the most important purpose of conducting the clinical interview was to identify specific characteristics of the primary stages of intellectual development, particularly the last three (preoperational, concrete operational, and formal operational). Piaget investigated several intellectual domains as a means of identifying these characteristics, for example, mathematical thinking, scientific thinking, language development, and moral development. Whether for purposes of exploration or supporting hypotheses for the establishment of a theory, Piaget structured the clinical interview in a very clear and concise manner. Piaget was an expert interviewer. His strategies as an interviewer entailed a number of elements. First, he would structure the interview without telling the child the answer to a particular problem. Doing

so would indeed defeat the purpose of conducting the interview because, as stated above, according to Piaget, telling or teaching impedes learning and discovery. Likewise, Piaget would not provide hints or leading questions, for this, too, would prevent the researcher from tapping a child's knowledge of a particular domain. Second, Piaget would provide an organized structure, or protocol, for the interview. Doing so avoids digression from the main topic of discussion. In addition, Piaget used counter suggestion as a means of identifying a child's genuine understanding of a subject or an idea. Counter suggestion is used by an interviewer when a child produces a correct response to a problem, but may not verify the response in any way. For example, in the problem $25 + 16$, the child might point to the 5 and 6 as the ones column and the 2 and 1 as the tens column. The interviewer will subsequently ask the child if the 5 and 6 is the tens column and the 2 and 1 is the ones column as a form of counter suggestion—the incorrect response. The child's subsequent response will then determine whether she has genuine knowledge of the ones label and the tens label.

Present-day researchers in developmental psychology and education make use of the clinical interview in several ways. The first way is to validate an accepted theory. For example, a researcher can perform an interview on a four-year-old child to determine the validity that children less than seven years of age lack the ability to conserve number or mass. A second reason for conducting a clinical interview is to support one's hypothesis concerning an individual's cognitive level or ability. Conducting several clinical interviews of this kind may lead to the establishment of a theoretical framework. For example, a researcher might establish the hypothesis that adults without formal schooling do not surpass the informal deductive stage of geometric thinking (level 3 in Dina and Pierre Van Hiele's theory of geometric development, which states that in the third level of geometric development, individuals are capable of identifying and comparing geometric figures based on their properties—e.g., rectangles have four right angles and opposite sides which are parallel (see Woodward and Hamel 1994). To test the researcher's hypothesis, several clinical interviews can be conducted on adults in, say, two or more age groups.

PIAGET AND EDUCATION

Piaget's theoretical framework has had a tremendous impact on educational programs throughout the world. First, many past and present scholars and practitioners consider him the pioneer of constructivism. Although Rousseau is credited with an alternative view of Locke's blank tablet view of humans at early stages of development, Piaget was perhaps the first (Heinz Werner is one possible exception) to support the organismic perspective with empirical data. The organismic perspective led to the view that children are not born as blank slates; rather, their experiences with the environment foster their cognitive development. The constructivist approach altered American education from a primarily behaviorist model prior to the 1970s to a more developmental approach in recent decades.

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PLATO

Plato (427–347 B.C.E.) was a preeminent Greek philosopher who had great influence on the conception of the observable world and its imperfections in comparison to the unobservable and unchanging forms. Born in Athens and raised in a wealthy aristocratic family, Plato pursued a strong interest in entering a career as a politician or statesman. As an adolescent, Plato served under the tutelage of his teacher and mentor Socrates. His decision to enter the field of politics was cut short at the age of twenty-eight in 399 B.C.E., when he found out that Socrates was sentenced to death for a number of allegations, includ-

ing the suspected corrupting of youth. Plato was greatly influenced by his travels to Italy and Sicily, where he became acquainted with mathematics and its connections with philosophical inquiry. He was particularly intrigued with the camaraderie of Pythagoras and his associates and their development of a deductive approach to mathematical thinking and its application to philosophy. Upon his return from Sicily in 387 B.C.E. Plato founded the Academy, perhaps the most renowned school of philosophical thought. It was at the Academy that Plato worked with his most famous student, Aristotle, who entered the Academy at the age of seventeen.

A "FIRST" PHILOSOPHY OF EDUCATION

Bertrand Russell's famous remark was that the entire corpus of post-Platonic philosophical discussion is only a footnote to the dialogues of Plato. When we consider the philosophy of education, however, Russell's maxim still holds—namely, that the entire corpus of writings in the philosophy of education is but a footnote to the work of Plato, in particular, the dialogue entitled "Meno." In "Meno," (translated by Jowett in the 1937 edition of Plato's *Dialogues*) Plato's view on educative processes is clearly demonstrated. In this dialogue, Socrates interrogates his acquaintance Meno on a servant boy's knowledge of the relationship between the sides of a square and a diagonal that bisects it. In Pythagorean terms, the square of the length of the diagonal—also the hypotenuse of each of the two congruent triangles formed—is equal to the squares of the sum of two sides of the square. This knowledge, Socrates points out, is a self-evident truth that even the servant boy can deduce by himself. Philosophers and historians cannot agree on whether Plato's dialogue "Meno" is historically accurate. The main point here, however, is that Plato's position on the origin of knowledge is demonstrated through discourse between either a real Socrates or a fictional one.

In addition to knowledge, in the dialogue "Meno," Plato also asks whether virtue is teachable. For Plato, the pursuit of knowledge, which is founded on self-evident truths, assumes the paradox that we always knew what we learn—that is, our knowledge of something we learn is not based on what we see, hear, or touch. Rather, it is based on recollection

and making connections between what we already know and what the problem is at hand. Meno, then, serves as the foundational text to the ongoing debate between the rationalist, empiricist, and material schools of thought in the philosophical enterprise. It is evident, then, that Plato believed that the role of education should presuppose one's pursuit of justice. The individual and the state are both responsible for maintaining and preserving a strong educational system because without one, the state runs the risk of corrupting society through immorality, thus affecting both personal conduct and the governance of the land.

Plato also believed that one can achieve a high level of intellect and a strong moral base through mathematics. He asks how it is possible to teach the youth to apprehend the most general and absolute norms and, at the same time, employ them for the purposes of self-examination in developing both knowledge and conduct. In preadolescence, Plato emphasized the importance of virtue. For Plato, the development of habit was the only way to lead a virtuous life. The health of soul and body, according to Plato, was to be conditioned through music and literature and by diet and exercise. However, he stipulated that certain forms of art and literature lead to the corruption of society. Upon adolescence, the educated person would then enter a second form of education—one that consisted of arithmetic, geometry, music, and astronomy, all to be studied from their theoretical perspectives rather than in their practical applications to industry or to the military.

Plato defends this form of curriculum in "Republic" (See Jowett's translation, 1937) because, through abstraction, the educated person can seek the truth through unchanging forms. Aside from his conviction that reality is mathematical in nature since it could be measured, he was fascinated by the notion that mathematics was a system of concepts predisposed to precise definition and rigorous development. Plato was interested in the ease with which mathematics could transform the concrete attributes of objects (i.e., size, shape, color, thickness) into abstract immutable ideas, free of material existence. For Plato, mathematics was seen as the penultimate rank with regard to knowledge: through mathematics, one can draw necessary conclusions within the rules and limitations of the idea discussed. From a theoretical perspective, music and astronomy, too, exhibited mathematical

structures and thus qualify as educating in abstraction. The highest level of knowledge, according to Plato, was dialectic, for it is in this domain that deductive relations characteristic of mathematics were discovered to obtain reality itself.

PLATO'S VIEW OF INSTRUCTION

Plato was a contemporary of Isocrates (436–338 B.C.E.), the well-known Sophist philosopher. Unlike Plato, Isocrates was remunerated for his services as a teacher and as an instructor and advisor to well-to-do Athenian youth whose parents (mostly fathers) encouraged their sons to become public servants and statesmen. One of the key issues of disagreement between Plato's philosophy and that of Isocrates had to do with how humans come to know things. For Plato, knowledge has to do with self-evident truths that are based almost entirely on certainty. Isocrates, on the other hand, purported to the beliefs of the other Sophists in that he posited that what humans come to know has little to do with absolute outcomes, and instead are much more probabilistic in nature. Plato also distinguished himself from the Sophist tradition by dichotomizing knowledge with opinion. It was not the separation of these ideas that contrasted Plato from Sophistic thinkers like Isocrates; rather, it was Plato's definitions of these terms that set him apart from the Sophists. Knowledge, Plato says, is based on certainty and eternal principles while opinion lacks reliability and validity and merely serves ephemeral ends. The Sophists would probably not disagree with Plato with regard to the meaning of opinion. In contrast, they defined knowledge to be far from certain and probabilistic—that is, one cannot apply absolute terminology (e.g., all, none, never, always) to situations or events (Barrow 1976).

Plato also made strong use of the cave metaphor in the allegory of the cave from the dialogue "Republic." Scholars seem to concur that the Socrates in "Republic" may not be historically accurate (Blankenship 1996). A number of classical Greek scholars refer often to this Socrates, usually discussed in the middle and late dialogues, as "Plato's Socrates." Nevertheless, Socrates presented the hypothetical scenario of prisoners who have been chained and are unable to move; they can only "see" the shadows that have been cast by artificial light, and interpret the shadows as real entities. For Plato, the initial goal of education

was to avoid the artificiality of shadows, and instead approach the actual representations of objects and ideas. Although objects were considered unreliable due to their ephemeral and empirical (that is, sense driven) qualities, ideas and what we understand and know are not. Concepts of things do not have any physical qualities. Thus, in order to transcend the senses as they are related to objects and one's sensual experiences with them, the individual must make use of abstract thinking. This form of thinking, most effective through the postulates and axioms associated with mathematical logic, allows one to identify the universal nature of an object or concept.

We know of the so-called Socratic Method not through Socrates, who incidentally wrote nothing, but through Plato. Plato argued that in order for one to search the truth, an appropriate method of questioning must be devised and employed. The pursuit of knowledge is not achieved solely through directives, or the dicta of so-called authoritative figures like the Sophists. Rather, learning takes place through discourse and the ability to engage in self-examination.

PLATO AND EDUCATION TODAY

Without question, Plato's views with regard to metaphysical characteristics of animate and inanimate beings are staples of Western culture and in many respects serve as one of the bedrocks of the modern education system. However, Plato's ideas, not unlike any of the other educational thinkers discussed, have been critiqued throughout history. First, unlike a number of philosophers before and after him (the Chinese thinker Confucius included), Plato did not believe that all people were capable of leading prosperous, introspective lives and possibly filling leadership positions. Instead, Plato reserved the leadership role, and thus formalized education, to the elite class, which he believed was both ethically and intellectually capable of rule and leadership. The majority of the citizens were to obey and follow the set of laws put forth by the ruling class. Consequently, Plato's ideas have often been considered authoritarian in nature. For example, urging the cultivation of morals in society, Plato believed that most infants should be removed from the guardianship of their biological parents and instead be raised by the state, which would then provide youth with a proper education whose curriculum would consist of both in-

tellectual subjects—mathematics, literature, music, natural studies (i.e., the sciences)—and physical and athletic training. This so-called proper education would cultivate knowledge (intellectual ability), conduct (ethics and morality), and preparation for leadership (governance). He argues in favor of censorship of any form of art that disparages good behavior and fosters unethical conduct. Only an elite class of philosopher-kings possesses the ability to preside over a state or nation. In addition, although Plato believed that women were capable of leadership positions, his writings seem to be biased toward male rule of the state.

With the criticisms aside, Plato's contributions to the field of education cannot be overestimated. His exhortation for the emphasis of both intellectual and moral education is often seen as self-evident by most leaders of education and educational administrators today (Dominic 1995). Plato's beliefs influenced a number of twentieth-century thinkers, like Edward L. Thorndike and William Kilpatrick, who helped shape the course of conventional educational practices, and at the same time, impacted the thinking of contemporary constructivists, like Jean Piaget and Jerome Bruner, who have advocated the importance of self-reflection and the two-way discourse between student and teacher as a means of searching for the truth.

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JEAN-JACQUES ROUSSEAU

Jean-Jacques Rousseau (1712–1778) was perhaps one of the most influential philosophers of the eighteenth century whose work on human nature and child de-

velopment carved a niche for future educators of the so-called constructivist tradition. Educational researchers and philosophers of education have generally pitted Rousseau's view of human development in diametric opposition to that of his English predecessor, John Locke (1632–1714).

For Locke, in terms of coming to know the world, the infant or young child is viewed as *tabula rasa*—a blank slate. That is, the young human being must be “turned on” (analogous to a machine) by an adult so that he or she will be able to learn about the world. The child, then, becomes neutral as he or she is “sculpted” by society. In stark contrast to Locke's worldview of human development, Rousseau saw children as being born good, but society will have an effect on keeping them good or corrupting them.

ROUSSEAUNIAN VIEW OF CHILD DEVELOPMENT

Rousseau published his world famous novel, *Emile*, in 1762, in which he established his premise that the natural state of humans at birth is good. For Rousseau, infants have an innate capacity that will serve as a means to help them develop into good and valuable adults. What we find in *Emile* is an entirely diametric view of child development compared to what we find in the work of Locke. Rousseau argues that society as a whole and its agents—parents, educators, and clergy—corrupt the young child and serve as the vehicles that exacerbate the problems of youth. Rousseau, then, concludes that the best way to raise children into valuable and virtuous adults is for parents and other adult figures to clear the path for the young child and remove society's obstacles so that each child can develop at his or her own rate. Children do not need the ills and evils of society thrust upon them as they develop into adults.

Moreover, unlike earlier mechanistic, materialist views of child development, Rousseau did not view young children as miniature adults. Nor did he view young children as blank slates, whose minds are seen as empty cells until the adult imposes or thrusts ideas upon them. Rather, the infant is viewed, in Rousseauian terms, as a perfect organism that adapts to each stage in life in a positive manner. This view clearly serves as a foundational position for future stage theorists—like Heinz Werner and Jean Piaget—

who became towering figures in the fields of epistemology, cognitive, and intellectual development.

ROUSSEAU'S ORGANISMIC WORLDVIEW

Rousseau presented a second philosophical position known as the organismic worldview. In this view, humans are seen as organisms in a holistic sense. The organismic worldview can be described by several characteristics. First, unlike the mechanistic, Lockean worldview, the organismic worldview identifies humans as inherently active agents in the world. The basic structure of their nature is one of change, not stability or inactivity. Second, humans are viewed as self-motivating agents in the world. They need not be turned on or provoked by external influences. In the Rousseauian worldview, then, nature—the internal, biological influences of the human—is the key function of human behavior. Third, in order to know something that is new, we do so by reconstructing what we already know. Humans create reality rather than absorbing copies of it. So, as the Lockeans would view human knowledge as the absorption of information, the Rousseauians would view knowledge as reconstruction and creation.

A fourth characteristic of Rousseau's organismic approach has to do with viewing humans in a holistic manner. That is, human behavior should be understood as an entire system or as a structural whole rather than using an atomistic or corpuscular theory whereby human behavior is studied in terms of its component parts. The whole, then, is not equal to the sum of its parts. Rather, it is greater than the sum of its parts. And finally, generalizations and universals are seen as having greater importance than individual differences. Accordingly, the organismic worldview focuses on what is typical of human development, not on environmental interventions that serve as obstacles to developmental processes.

IMPLICATIONS OF THE ROUSSEAUNIAN WORLDVIEW

Without question, Rousseau's philosophical approach to human development served as a springboard for later philosophers (e.g., Henri Bergson and John Dewey), developmental theorists and epistemologists (e.g., Heinz Werner and Jean Piaget), and educators

(e.g., Johann Friedrich Herbart, Friederich Froebel, Maria Montessori). His ideas were also foundational for theories related to human development in terms of stages or periods.

Although Rousseau's worldview served as the groundwork for future theorists, it was by no means the first philosophical approach that embraced an active, organismic model as the primary representation of human behavior. Even in the fourth century B.C.E., Plato's metaphysical identified human behavior in this light. One primary example can be found in his dialogue entitled *Meno*, in which we find Socrates questioning Meno about the young servant boy's knowledge of the length of a diagonal bisecting line of a square and its relationship to one of the sides. The boy knew the answer to this relationship (i.e., the Pythagorean Theorem) not because he was told or taught it, but because he constructed this understanding through the self-evident, inherent structure of the relationship. Other later pre-Rousseauian philosophical discussions that embraced humans as active agents in the world included those by other so-called rationalist thinkers like René Descartes and Benedict Spinoza.

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SOCRATES

Socrates (469–399 B.C.E.) was a preeminent Greek philosopher, whose well-known saying was that an examined life is one worth living. Although classical Greek scholars are fairly clear as to how Socrates lived his life and the contributions he made, there is little, if any, evidence that he wrote anything at all. This point in and of itself is remarkable, given that society generally associates intellectual contributions with written output. Socrates, teacher of

Plato and often informally referred to as the greatest of all teachers, is a clear example of a teacher whose educational goal or end was that of searching for a virtuous life, and not of immediate success as a politician or acquiring immediate skills for a temporary purpose. Without question, this very theme of Socrates' agenda distinguished him from his counterpart philosophers of the time, such as Protagoras, Isocrates, Thrasymachus, and other members of the Sophist tradition. In contrast to Socrates, however, the Sophists were paid for their services as teachers, and were highly regarded as the best teachers for careers in the most esteemed occupations at the time—law, politics, and even art and music. Socrates became known for the pursuit of teaching virtue because the very subject was so elusive in terms of observable evidence (Broudy 1963). Nevertheless, Socrates often questioned Sophist philosophers about whether they taught virtue. Although the Sophists claimed that they did, Socrates demonstrated that they could not even define virtue let alone teach it. At best, Socrates argued, the Sophists taught a set of skills that could only be applied to ephemeral success.

Socrates is often referred to as a gadfly; part of what contributed to Socrates' eventual trial and subsequent execution had to do with his approach to finding the truth. Through his general delivery and questioning methods, he angered numerous individuals and embarrassed them, many of whom were Sophist philosophers. Socrates was sent to trial in 399 B.C.E. Classical scholars have indicated that he was permitted to select his punishment: (1) he could be banished from Athens, or (2) he could select execution by drinking poison hemlock. Socrates chose the latter more out of necessity and principle than of will.

EXHORTATION AND THE SOCRATIC METHOD

The problem with identifying Socrates' life work has a great deal to do with the reliability and consistency of primary resources. We know of Socrates' life contributions from two primary sources: (1) Plato, perhaps his most famous student, and (2) the written records of his neighbor Xenophon. His role in education emanates from his approach to argument and rhetoric. Researchers of classical Greek thought, and

society seemed to agree, that the early extant dialogues of Plato are perhaps the most reliable, in part because some were written during the period when Plato was a pupil of Socrates. Regardless of the time in which a particular dialogue was written, Plato demonstrates Socrates in highest form with his interlocutors and even with his pupils. For example, while walking to the home of Callias to hear the well-known rhetorician and sophist Protagoras speak, Socrates interrogates his pupil Hippocrates:

But are you aware of the danger which you are incurring? If you were going to commit your body to some one, who might do good or harm to it, would you not carefully consider and ask the opinion of your friends and kindred, and deliberate many days as to whether you should give him the care of your body? But when the soul is in question, which you hold to be of far more value than the body, and upon the good or evil of which depends the wellbeing of your all—about this you never consulted either with your father or with your brother or with any of us who are your companions. But no sooner does this foreigner appear, than you instantly commit your soul to his keeping. (Plato 1953, 137–38)

As this passage indicates, Socrates, through the use of exhortation, seems to have put Hippocrates into a state of anxiety by questioning his pupil's state of mind by insisting to follow the words of Protagoras. Socrates uses exhortation effectively as a means of illuminating reality and bringing out the truth during conversation and debate. Oftentimes, this resulted in jolting or even unnerving his interlocutor or pupil to the point where the listener feels uneasy and fails to support his argument. This notion of "illumination" can be seen in *Republic* of Plato, specifically in the famous allegory of the cave (see Jowett's translation of "Republic," 1937). The chained prisoners—who reflect the general public—must overcome their passions and desires in order to be unchained. After bondage, the prisoners will leave the dark cave and be jolted by the light outside. This action may contribute to a radical change in one's mindset and perspective on life. Based on this format of argumentation, Socrates was thus seen as a provoker and a gadfly, especially to those individuals, like the Sophists, who felt satisfied with their skills and knowledge.

Socrates is often seen not only as a philosopher and teacher but also as perhaps the first psychoanalyst. He would often begin conversation with an interlocutor, who would view the initial question as something too obvious for continued discussion. Nevertheless, Socrates would demonstrate that the subject of discussion—oftentimes about virtue, courage, or justice—was actually not so obvious after all. The opponent of Socrates would unveil his ignorance, even to the point of eliciting embarrassment and anger. When the anger was directed at oneself, Socrates would employ positive discussion as a form of dialectical self-examination and reflection. As seen from this scenario, the teacher is not merely a stimulus or an individual who merely provides a ripe environment for growth and development; rather the teacher is a leader who guides the student. The student must follow the teacher because the teacher's life is dedicated to scholarship and learning.

SOCRATES AND THE ROLE OF TEACHING AND LEARNING

An accurate way to identify the educational method of Socrates (and subsequently Plato) as it differs from those of other thinkers is to compare and contrast his teaching doctrine with those of his contemporaries—namely, the Sophists themselves. Due to their systematic documentation of rhetorical form, the Sophists viewed the act and practice of teaching as a systematized, mechanized operation that fostered imitation. That is, a teacher becomes a teacher through a great deal of imitation. For the Sophists, then, the practice of teaching was algorithmic; you follow specific steps in all teaching situations, and a certain set of steps was associated with specific skills to be learned.

Not so for Socrates and his followers. For them, the role of the teacher was far from mechanistic. The product of any lesson for any subject was not merely a correct or incorrect response or answer. Rather, the interaction between teacher and pupil was one in which intellectual development was paired with dispositional consciousness. For example, in addition to strong content knowledge, to become an architect, one must have good judgment when embarking on a project. So, for Socrates, the role of education was to seek the truth in any subject one wishes to study. Edu-

cation does not consist of a set of steps to follow, for this does not yield perfection in a particular discipline.

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BURRHUS FREDRICK SKINNER

Perhaps the most recognized behaviorist in the history of the psychological learning theory movement was Burrhus Fredrick Skinner (1905–1990). Skinner spent most of his time at Harvard University with a short hiatus in the 1940s at the University of Minnesota and another at the University of Indiana. The behaviorism of John B. Watson, one of Skinner's predecessors, succeeded chiefly at the level of polemic; a behavioral science could not be developed using no more than classical (Pavlovian) conditioning techniques. As discussed below, Skinner went far beyond classical conditioning techniques to support behaviorism and, in fact, influenced the field of education for several decades during the twentieth century.

EARLY YEARS AND INTERESTS

Burrhus Frederick (henceforth, B. F.) Skinner was born in 1905 in the small town of Susquehanna, Pennsylvania. Skinner was fascinated with building and construction as a child. He also developed an intimate liking for literature and composition. As a graduate of English literature from Hamilton College in New York, Skinner tried to earn a living as a writer. His other deep interest was psychology and eventually he decided to enter that field. He was considerably influenced by the work of Ernst Mach, one of the great physicists of the second half of the nineteenth century. When planes fly faster than the speed of sound, they fly in terms of Mach numbers. In addition to physics, Mach wrote influentially in the philosophy of science. It was Mach's conviction that philosophy and metaphysics should be removed from science. Science was concerned with the ob-

servable world and with a systematic treatment of what is observed. When addressing the definition of scientific law, Mach argues that a scientific law is solely a systematic description of experience. For Mach, the grounding of science is at the level of observation and experience. This strongly influenced not only B. F. Skinner but also an entire generation of scientists in the twentieth century.

Skinner was committed to a descriptive science of behavior; that is, a non-theoretical science of behavior, something akin more to engineering than to a form of theoretical physics. He was interested in how to build behavior into a system and how to predict and control that behavior. The first development of Skinner's thought to reach the public was a book written in 1938 entitled the *Behavior of Organisms*. It became a classic for generations of behaviorists, who would refer to it as the B of O. The book served as an argument for what the subject matter of psychology should be, a statement of what constitutes reliable data in the field of psychology, and perhaps most important, something of a declaration of independence in the discipline.

A scientific psychology based on observable behavior does not have to tie itself to physiology or chemistry or any other subject. It can prosecute its own agenda with its own tools at hand. This was a clarion call for any number of psychologists at the time. Psychology even before Wilhelm Wundt (discussed below) was always seeking scientific status and always seeking to define itself in ways that would allow one to distinguish between it and medicine, physiology, ethology, and so forth.

PSYCHOLOGY'S BREAK FROM PHYSIOLOGY

Skinner questioned the historic dependence between psychology and physiology. Wilhelm Wundt, often considered the first experimental psychologist, used physiology to influence his psychological method. Throughout the nineteenth century, the scientists we would identify as influential in the history of psychology were tying psychological processes with brain processes as they do today. A developed and scientific psychology would be a functional neuroanatomy, determining how different events in different places in the brain give rise to thoughts, dreams, associations, learning, memory, and the like.

When Skinner questions the nature of the relationship between a scientific psychology and physiology, he answers “none.” It is nothing with which a psychologist needs to be concerned. The facts of behavior will survive any theoretical construction we impose on them. For Skinner, from the perspective of a behavioral scientist who has studied the conditions that established behavior (i.e., conditions in the environment), if you opened the zipper of the animal and looked inside and found nothing all, you would still have the facts of behavior. You would still know the relationship between events in the environment, and systematic alterations in the behavior of organisms—nothing is added to the information by finding out that there are nerves, blood vessels, and the like; nothing would detract from these findings if they were nothing inside at all.

Skinner argues that scientific behaviorism can be developed without waiting for the physiologists to solve their problems. One does not have to wait to know everything about the brain in order to figure out what it is that determines the course of behavior. A purely descriptive science of behavior has to be a science that is extremely lean in its terminology; it cannot make use of theory terms as if they had some actual ontological standing. Problems of definition have to be solved for this discipline to develop. Mentalistic, or unquantifiable, terms (or those terms that are associated with idiosyncratic sensations) must be avoided. These terms presuppose an independent private mental life that only the introspective mental individual has access to, and you only find out because the individual tells you (e.g., “I’m hungry!” or “I understand . . .”).

To shun these terms, one adopts operational definitions: you define your chief terms by reference to the actual operations or methods you would use to realize or produce whatever it is to which that term is referring. Take the motivational term “hunger.” In casual discourse, the way you explain why someone is going to the counter and ordering something and eating it is “they must be hungry.” When one says, “they must be hungry,” there is a reference to some internal state, something that only they can know about for certain; it is quite private. You cannot see hunger or anything about it. The term hunger, then, becomes some a type of mentalistic term.

Suppose you want to study the relationship between behaviors of consumption like eating or drinking. The question, then, is whether it is possible to observe hunger. This is not possible. Instead, one is going to

study hunger in relation to some other observable element—namely, time. By hunger, Skinner refers to the number of hours of food deprivation. The interesting thing about defining hunger that way is from laboratory to laboratory, country to country, year to year, hours of food deprivation is hours of food deprivation, no matter where you are. One does not have to ask whether the organisms are equally hungry. To determine whether they were equally anything, it would be necessary to look for equality in their behavior. Again, it is all external—not internal. The determinants of behavior are found outside the organism, not inside the organism. Behavior is a response to events in the environment. What an organism has to do is to survive in a real, physical world; it does this by behaving in response to the challenges presented by that world. Operational definitions are helpful in that they allow you to establish comparable laboratory procedures from one laboratory to another, and they also allow you to understand the meaning of terms as different investigators use them.

LEARNING THEORY

Learning theory follows the philosophical tradition of John Locke, which claims that behavior is formed by the external environment. Ivan Pavlov is credited to have identified the basic tenets of learning theory. Pavlov’s work served as a springboard for future theorists like Edward L. Thorndike, John B. Watson, and Skinner, soon after. In 1938, when *Behavior of Organisms* was published, the world was not ready for Skinner’s behaviorism and theory of learning, possibly as a result of its association with genetic psychology. By 1945, no one was interested in genetic psychology, that is, predetermined types. It was not until the 1950s that interest picked up. Keller and Schoenfeld (1950) decided that the way to put behaviorism and learning theory on the map was to arrange an entire psychology curriculum around principles of behavior. By the middle and late 1950s, Skinner became a nationally and internationally recognized figure in the field of psychology.

Early Influences

To identify what is involved in Skinner’s behaviorism, we first look at studies from the end of the nineteenth

century by Edward L. Thorndike (1898), the well-known professor of educational psychology from Teachers College, Columbia University, who studied the behavior of cats inside cages with little loops hanging down. If the cat puts a paw through the loop and pulls on it, the cage opens up and the cat can get a piece of food. Thorndike published the first animal learning curves. He plots the amount of time it takes the cat to get out of the cage as a function of the number of trials (*Animal Intelligence* 1898).

Skinner identified some problems with Thorndike's approach, however. First, Thorndike used mentalistic language: The behavior that gives rise to a satisfying state of affairs tends to be repeated; the behavior that gives rise to an unpleasant or painful state of affairs tends never to be repeated. He refers to this as a law that covers all behavior—law of effect. Skinner says that Thorndike had the right idea in that he was looking at the right kind of behavior. He was looking at the kind of behavior an animal uses to get through the world and to secure what is necessary for survival. That is what psychology should be studying. Not the Pavlovian kind—not with a dog locked in a cage, powdered food in the mouth, and saliva measured. What does this represent? This has nothing to do with the Darwinian context in which creatures have to adapt themselves to the demand characteristics of the situation. In that latter realm, the behavior that counts is musculoskeletal behavior—the moving, the grasping, and the running (Bjork 1997). Another problem, according to Skinner, is Thorndike's laboratory setup. Thorndike picked the wrong form of species (cat) and the wrong type of environment. Skinner believed that in order to precisely measure animal behavior, it is necessary to identify a laboratory animal that does not need a large space to move around. A cat, for example, often runs too fast for an experimenter to measure behavior. Moreover, a smaller space is more conducive for measuring behavior since the experimenter does not have to spend time moving from one location to another (Bjork 1997).

The Skinner Box and Fixed Ratio Schedule

Skinner developed a box, commonly referred to as a Skinner Box, that allowed for the limitation of behavior. He would put an animal (most often a rat) in

this relatively confining enclosure. He wanted to limit responses to those that were readily measurable and quantifiable. The following scenario illustrates Skinner's method of observing behavior based on stimulus response.

A lever is sticking out of the box—and the rat is in the box. You only find this animal in psychology laboratories. The rat has been deprived of food in the box. The rat sniffs around the inner sides of the box, tries to get out of the box—the lever is sticking out. The animal might lean on it for balance or sit on it. And the microswitch is closed. A little food magazine tray is turned and a pellet of food drops down into a food well just underneath the lever. The animal then goes to the food well, lifts up the pellet, and eats it. One notices that there is a little less time sniffing around the top corners of the cage, and more time spent around the lever. Within an hour, the animal will be pressing the bar, in fact leaning back and pressing continuously. (Crain 1999)

This is the result of what Skinner calls “continuous reinforcement” (Crain, 1999). This is where every bar pressed results in a reinforcement. An operational definition of reinforcement is the following: A stimulus is a reinforcer when it alters the probability of the behavior that produces it. Any stimulus that significantly increases the likelihood of the behavior that brings it about is a positive reinforcer. And any stimulus that significantly decreases the likelihood of the behavior that brings it about is a negative reinforcer. In short, it is the animal's behavior that defines the reinforcer, not the psychologist trying to get into the mind of animals (as a psychoanalyst would).

When Skinner was in Minnesota and using pigeons in his experiments, he developed a method of delivering a reinforcer per peck and every other peck—and you can rearrange the food portions for every three pecks. This is an example of partial reinforcement. Not every response is reinforced but every fraction of responses. These are referred to as schedules of reinforcement. For FR3—fixed ratio three—you get a reinforcer for every three responses (or pecks). You could have an FR20, FR50, and so forth. Skinner was able to show that you can increase response rates to very high levels.

Variable Ratio Schedule

The most remarkable of the schedules of reinforcement is the variable ratio schedule. The animal starts out on continuous reinforcement. Every response receives a pellet. You now build in a fixed ratio schedule with a low FR value and then you start to stretch out the FR requirements, to an extent where one now moves to a low variable ratio schedule. What that means is this: If one moves to a VR2, over a long run of numerous trials, every second response (e.g., a pigeon's peck, a rat touching a lever) will receive a reinforcer, a food pellet. But one never knows from trial to trial which response will receive one. This is determined randomly.

The experimenter can then change from VR2 to VR5, or any other variable ratio. Virtually for the rest of the animal's life, you can disconnect the feeder, put the animal in a test chamber, and it will press the bar ad infinitum. Skinner refers to this as gambling behavior. Variable Ratio Reinforcement is the sort of schedule that will maintain stable rates of behavior indefinitely. To use introspective, mentalistic language: How does someone at a slot machine know when to stop pulling the lever—the answer is “never” because it may pay off next time, next time, next time. Nothing in the acquisition of the behavior provides a cue as to what condition must be satisfied for a reinforcer to be delivered. For example, if you take fixed ratio reinforcement you know that for every three pecks of a pigeon, a reinforcer is delivered. Now, if the feeder is disconnected and the pigeon pecks three more times and nothing happened, then the pigeon will eventually stop pecking. But suppose this behavior has been reshaped by variable ratio reinforcement. It is then difficult to determine what the contingency is that must be met in order for a reward to be given. This is one of the most powerful displays that behaviorist psychology was able to produce: the ability to maintain behavior over long stretches of time in an animal that is virtually untiring in responding even if a reinforcer has not been delivered in days, weeks, and even months. This is a powerful illustration of how events in the environment can impose extraordinary reliability on the behavior of organisms.

AVOIDANCE CONDITIONING

An animal is put in a box that has an electrified floor; a light comes on, and ten seconds after the light goes

off, the floor is electrified. There is a little barrier that the animal can jump over and thereby escape from the shock. After one or two of these trials, the animal is put in the box, the light is turned on, and he jumps over the barrier. When put back into the box at a later time, he jumps over the barrier, and jumps over the barrier continually—whether the floor is electrified or not. Perhaps there were only one or two punishing stimuli.

The rat stands on the floor, the light comes on, and 15 milliamps come through the paws, and he is half a foot off the ground. The next time the light comes on, the rat is not sensing whether the shock is going to come this time. Instead, he runs. And he keeps running. This is again a powerful illustration of how an event in the environment can get a controlling hold on behavior indefinitely. There are parents who cannot determine why an offspring stops a particular behavior. One scenario might include the following dialogue: “Is there any physical abuse in this family?” The parents say, “No.” Do you use corporal punishment? The parents say, “No.” Did you ever hit your child? The parents say, “Well, only once.” This is the classical example of avoidance conditioning. One does not have to do it more than once in order for the organism to behave in such a way as to avoid that environment.

SKINNER'S INFLUENCE ON LEARNING WITH REGARD TO THE FIELD OF EDUCATION

According to Skinner, there are three variables that influence the process of learning. First, there must be a situation in order for a behavior to occur. Next, a behavior must take place. The third variable is the consequence of the behavior. If, in a particular situation, a person exhibits a distinct behavior or response from a class of responses known as an operant, and if this individual is reinforced by this response, then it is likely, according to Skinner, that learning will occur.

In one of his well-known books on human behavior, *The Technology of Teaching* (1968), Skinner concludes that within the first four years of schooling, a young child will need in the area of 25,000 reinforcements in order to succeed as a student; however, children receive only about 3,000 to 4,000 such reinforcements. In this important

book on teaching and learning, Skinner builds the theme around learning as a science and teaching as an art. He provides an overview as to why teachers fail and why students often lack motivation. At the same time, he provides insight into how his theoretical approaches can be applicable to the classroom environment.

Skinner's research on learning and how teaching affects learning suggests many reasons why students finish grade levels without necessarily learning concepts in a variety of subject areas. First, many students attempt to learn subject matter as a means of escaping punishment or negative consequences (e.g., parental disappointment, peer comparisons, teacher discontent). This aversion, according to Skinner, impedes improvement of skills. Second, teachers often fail to use positive reinforcements to the fullest extent in their classrooms. One reason for this might have to do with the fact that teachers often have very large numbers of students. Second, teachers might provide positive reinforcements several minutes after a student's response. According to Skinner, a short time lapse between a student's positive response and the teacher's positive reinforcement will adversely affect the student's behavior. And third, as mentioned above, the frequency of reinforcement might be deficient.

SKINNER'S HISTORIC INFLUENCE

Indeed, Skinner's influence in the fields of psychology and education is remarkable. As a behaviorist and experimental psychologist, he perfected and even superseded, from a scientific standpoint, his predecessors—such as Thorndike, Watson, and Pavlov—with regard to theoretical approaches of behaviorism. This is not to say, however, that Skinner's work was not scrutinized by his contemporaries. To be sure, Skinner was not a developmentalist by any means. Nowhere in his work does he refer to “stages of development” or “intellectual or cognitive levels.” Developmental psychologists in particular often criticized his work on grounds that he based all learning not on growth or periods of development, but on microcosmic changes—stimuli and responses—that alter behavior, and that this position fails to consider human actions that take place over a significant amount of time.

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LEV VYGOTSKY

Lev Semyonovich Vygotsky (1896–1934) was a Russian lawyer, art historian, and philosopher-turned-psychologist whose influence on cognition and education has gained a great deal of momentum in American psychological and educational circles during the last two decades. Although he appeared as precocious and prolific as another well-known contemporary—Jean Piaget—Vygotsky succumbed to tuberculosis at the early age of thirty-seven, leaving behind a vast theoretical body of literature that would be revived by American psychologists nearly thirty years after his death.

HISTORY

Vygotsky was born near Gomel, a city near Minsk in 1896. Born into a middle-class Jewish household, Vygotsky was acquainted early with the works of numerous philosophers. The ideas of the so-called rationalist philosophers, particularly the ideas of Rene Descartes and Benedict Spinoza, fascinated him. Vygotsky's precocity was evidenced by his fluency in at least eight languages other than Russian, and his ability to memorize almost all of the plays of Shakespeare. In the early part of the twentieth century, nearly all the colleges and universities in Russia invoked a quota system that limited the number of Jewish students enrolling in higher educa-

tion institutions. Fortunately, Vygotsky won a lottery to attend Moscow University, where he graduated in 1917.

With the belief that the Bolshevik Revolution would end Jewish discrimination in Russia, Vygotsky became strongly influenced by the works of Georg Hegel and Karl Marx. These philosophies strongly emphasized the importance of society and the value of labor in increasing the potential of human ability. Vygotsky believed that the Marxist perspective, in which technology and tools (defined as any object or idea that allows a human being to act on something) transform society and help humans to evolve socially, could be the foundation for a new theory of human development that would account for human functioning in a more constructive manner.

One aspect of the Marxist perspective on human development that Vygotsky espoused was a dialectic view of change. In dialectic reasoning, one begins with a thesis—the argument. An antithesis is presented to challenge the thesis, and by the combination of thesis and antithesis, a person constructs a synthesis, a new level of argument or understanding. This combination has already been seen in complementary and often conflicting processes found in other theories—namely, Erikson’s notion of perpetual interplay between seeking connectedness and independence, and Piaget’s balancing processes of assimilation and accommodation. For Vygotsky, however, this dialectic was between the individual and the nonindividual, that is, the individual versus others. In synthesis, they combined to move development to higher levels of thinking and functioning. These principles became the foundation of Vygotsky’s cognitive theory known as cognitive mediation.

By the early part of the 1920s, Vygotsky settled on psychology as his primary field of inquiry. His initial publication was on the psychology of art. Incidentally, his Ph.D. dissertation was on the subject of the psychology of art. His other interests in human development were on the early stages of language, intelligence testing, and principles of education. One of Vygotsky’s major contributions during his lifetime, however, was his work on “defectology”—the study of severe physical disorders that affect learning and intellectual abilities. Vygotsky’s interest in intelligence testing was along paths similar to those of Binet, namely, to identify levels of intelligence for the purpose of maximizing

the cognitive potentials of individuals, regardless of level of performance.

In his final years and for over two decades after his death, Vygotsky’s work was banned from nearly all Russian libraries and universities. Despite his overall Marxist perspective on human development, the Bolshevik Soviet government purged his work on the grounds that Vygotsky’s writings supported the bourgeois class. The censorship of Vygotsky’s work, particularly the writings during his last ten years, was the reason why most of his writings were unpublished during his lifetime. Most of what we have today comes from posthumously published works that were kept by his closest students and his family. The first work by Vygotsky, in fact, to appear in the United States, was the publication *Language and Thought* in 1963. With the collapse of the Soviet Union, there has been an increased interchange between American and Russian scholars that has provided even more details of and insight into Vygotsky’s thinking.

It is important to note, however, that Vygotsky’s realization of his ultimate fate (given his more than a decade long illness) led him to write at a feverish pace. His data collection was meager. His writing, therefore, was highly theoretical. And instead of spending his time collecting data, his agenda was primarily to find appropriate methods for supporting his theoretical framework. So, unlike Piaget, who spent very little time developing a method of inquiry (namely, the clinical interview and systematic observation), Vygotsky’s agenda was broader in that it looked beyond the individual’s cognitive abilities and instead was focused on society’s influence on the cognitive levels of human beings. For this, then, Vygotsky’s search for method was of primary importance.

COGNITIVE MEDIATION THEORY

Vygotsky’s general theoretical framework is referred to as cognitive mediation theory. Vygotsky believed that we share our lower mental functions with animals. We differ greatly, however, from animals in that we possess mental, psychological tools to enable us to think. It is important to consider Marx’s influence here, in that Vygotsky believed that tools are the mediators of progress. According to Vygotsky, we acquire tools from our culture and the prior learning of our species. In comparison with learning theory, external stimuli elicit responses from indi-

viduals; however, when we acquire a psychological tool, like language, the tool itself mediates between the external stimuli and the subsequent responses. Our psychological tools help us compare, classify, and even plan events; that is, psychological tools create intentionality. Therefore, we learn not to respond directly to external stimuli as do nonhuman animals.

Culture is passed on to us through society, which is passed on to us through the adults in our society. What we identify in our culture is what we incorporate into our cognitive structures, which thereby determines the psychological tools we use (e.g., if we are born and raised in an English-speaking country we will develop knowledge of speaking, reading, and writing English as a means to various ends).

What are psychological tools, where in culture do they come from, and why are they so important for the development of what Vygotsky refers to as higher cognitive processes? First, psychological tools are symbols. Next, the symbol systems used by other developmental theorists, like Piaget, are Vygotsky's primary tools for cognitive development: language, play, art, writing, mathematics, and so forth. These symbol systems differ from Piaget's use of them in at least two ways: (1) they are derived from society—the people around us—not necessarily from within ourselves, and (2) these symbol systems are not merely the means by which we think, rather they can completely reorganize the manner in which we think.

For Vygotsky, language is the primary psychological tool. Vygotsky outlined the process by which children internalize language as a personal tool. At first, adults in our culture provide the child with a particular language and set of symbols. As the child masters the use of language, she begins to use language both to communicate with others and as a form of egocentric speech—talking to oneself, usually out loud. As time progresses, the child is able to eliminate the overt nature of speech and internalize egocentric speech. Vygotsky referred to this internalization as inner speech. The child is still talking to herself but only mentally. We find adults doing this as well. In time, the inner speech becomes the mediating tool for the child's thinking. She begins to use automatic and truncated speech to think and plan. Although language is the primary tool, other symbolic tools become internalized as well, like mathematical thinking or visual thinking.

The following are two examples of inner speech

used by a child and by an adult. In the first example, a father tells his preschool aged daughter that mail is delivered every morning at around ten o'clock. During afternoon playtime, the young girl is playing "house" by herself and repeats, "Mommy and Daddy, it's time to get the mail! It just turned ten [o'clock]!" The adults heard this and realized that the girl was repeating what her father had told her about the timing of mail delivery. In a second example, an adult is learning a new recipe. He says to himself: "If I remember correctly, I add two teaspoons of butter to the mix before I add the sautéed vegetables . . ." "So, whether a child or an adult, we use these symbolic devices which are derived from inner speech to guide our thinking, planning, and actions.

Curriculum experts and educational psychologists have promoted Vygotsky's view that society, through the aid of adults, helps children regulate their actions at first until they have internalized the mediating devices. Only then will they be able to regulate the devices themselves without adult guidance or intervention. This process of internalization of egocentric speech does not carry the connotations of conditioning or behavior modification as effective processes. Vygotsky outright rejects the stimulus-response framework of learning theory because the behaviorist model is reactive and focuses solely on external properties. Instead, to understand the essence of someone's behavior, overt response is not important. You must focus on an underlying process and particularly on the genetic or initial history of the process.

Like Piaget, Vygotsky examined the process and the history of the organism. Any psychological process is one going through changes right before one's eyes.

SPONTANEOUS VERSUS CONVENTIONALLY SYSTEMATIC CONCEPTS

Vygotsky makes the distinction between spontaneous, or everyday, concepts on the one hand and scientific, conceptually systematic concepts on the other. Spontaneous concepts are concepts that children develop within their everyday environment. These concepts are like little reflections, strong in what concerns the situational, empirical (what the child sees with her own eyes), and the practical. In con-

trast, scientific concepts, also generally identified as conventionally systematic concepts, refer to a hierarchical system of interrelated ideas. Scientific concepts are highly organized and systematic. School instruction, for example, makes a child self-conscious of particular concepts.

Rudiments of systematization enter the child's mind through scientific concepts. Vygotsky argued that instruction in scientific concepts is very helpful because it provides children with broader frameworks in which to place their spontaneous concepts. For example, a seven-year-old boy might have developed the spontaneous concept of grandmother, but his concept is primarily based on his image of his own grandmother. If we ask him to define the term, he might reply, "She always makes cake for me." Formal instruction, in which the teacher diagrams family trees (including concepts such as grandparents, parents, and children) can give the child a broader framework in which to place his spontaneous concept and help him understand what a grandmother really is (Vygotsky 1978).

Vygotsky, then, believed that spontaneous concepts moved in an upward manner while scientific concepts had a downward movement. In Vygotsky's own words: "The upward everyday [spontaneous] concept clears a way for a scientific [conventionally systematic] concept and its downward development. Scientific concepts provide structures in turn for everyday concepts by making them conscious and deliberate."

THE ZONE OF PROXIMAL DEVELOPMENT

One of the most significant contributions of Vygotsky's theory of cognitive mediation has been the concept of the zone of proximal development. According to Vygotsky, the zone that covers an individual's current

developmental level stretches from the level at which the child has already completely mastered lower level skills and knowledge to the level at the upper limit of the individual's capacity, where the child can use a skill or know something only in the best of circumstances. The lower level of the zone is defined by Vygotsky as the actual level of development. Everything below this level has already been mastered—prior knowledge. Everything above this level is as yet unachievable by the person and beyond his or her limits (the future). Everything between these two levels is in the zone and is potentially achievable by the person (the present). This area is called the zone of proximal development because this range covers the problems, challenges, and tasks that are proximal, or next to, the person's last fully developed level of abilities.

Vygotsky proposed a zone rather than a distinct point in the course of an individual's cognitive development because whether a person can perform a task or successfully solve a problem depends on many environmental factors—for example, whether a problem is written clearly, whether a problem has a simple solution or a complicated one, whether there is another person serving as a facilitator, or whether aids, cues, or hints are provided.

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VII

ORGANIZATIONS

ORGANIZATIONS

The tenth amendment to the United States Constitution reserves the right of education to the states. This has produced fifty decentralized state agencies and other governmental regulatory bodies in territories that develop educational requirements. Over time, there has been an increase in organizations that are interested in education at the local, state, and national levels. At the national level, Public Law 96–88 established the federal Department of Education. The stated purpose of the Department of Education Organization Act–Title I: General Provisions is:

(1) to strengthen the Federal commitment to ensuring access to equal educational opportunity for every individual; (2) to support more effectively States, localities and public and private institutions in carrying out their responsibilities for education; (3) to promote improvements in the quality and usefulness of education through federally supported research, evaluation, and the sharing of information; (4) to improve the management and efficiency of Federal education activities; (5) to increase the accountability of Federal education programs to the President, the Congress, and the public; (6) to encourage the involvement of the public, parents, and students in Federal education programs; [and] (7) to improve the coordination of Federal education programs. (Public Law 96–88, 1979)

Since the establishment of the U.S. Department of Education, constant reform initiatives have been established to formalize and centralize the field of education. Direct federal intervention in the field of education can be observed since *A Nation At Risk* (1983). From that point forward each successive administration had their own brand of reform. At present, the No Child Left Behind Act has had far reaching impact on students, teachers, administra-

tors, parents, and educational-related agencies. Many of the agencies and organizations that comprise this chapter are the conduits that develop, conduct, and promote the educational initiatives of the U.S. Department of Education. Much of the incentive to comply with the department’s mandates comes through grants and other monies.

The National Educational Association (NEA) is the largest group concerned broadly with the education of teachers and their practices in the United States. The NEA has far-reaching influence in the field of education. This is demonstrated by its investment in other organizations such as the National Board of Professional Teaching Practices (NBPTP) and the National Council for the Accreditation of Teacher Education (NCATE). The NEA has provided financial or advisory board support to these organizations. Parallel to the NEA would be the American Federation of Teachers. The American Federation of Teachers is firmly grounded with its roots in organized labor and remains active in promoting educational reform. Other associations that are also broadly concerned with the education of teachers would include the American Association of Colleges for Teacher Educators (AACTE) and the Association of Teacher Educators (ATE). Other teacher organizations such as the National Science Teachers Association (NSTA), the National Council of the Social Studies (NCSS), the National Council of Teachers of English (NCTE), and the National Council of Teachers of Mathematics (NCTM), are involved with a variety of subject matter in grades Pre-K through college. A third group of organizations is affiliated with national certification and accreditation of educational programs and schools. These would include the National Council for the Accreditation of Teacher Education (NCATE), Teacher Education Accreditation Council (TEAC), and the National Board for Professional Teaching Standards (NBPTS).

These associations collectively exercise a large degree of control over the field of education. This occurs through the development of curriculum, instruction, licensing, assessment or accreditation. Above all, in this chapter, we discuss the role of educational organizations and associations that affect the development of teachers and students.

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SUBJECT MATTER ORGANIZATIONS

Subject matter-based teacher organizations include associations that foster and promote teacher and student support and enrichment in a distinct subject area. This entry includes seven organizations. They are the American Council on the Teaching of Foreign Languages (ACTFL), the International Reading Association (IRA), the International Society for Technology in Education (ISTE), National Council for the Social Studies (NCSS), National Council of Teachers of English (NCTE), National Council of Teachers of Mathematics (NCTM), and the National Science Teachers Association (NSTA). As indicated in the profiles below, these organizations vary in size, educational missions, contributions to the field, and financial status.

AMERICAN COUNCIL ON THE TEACHING OF FOREIGN LANGUAGES

The American Council on the Teaching of Foreign Languages (ACTFL) was established in 1967. It is a non-profit professional organization with approximately 8,000 members. ACTFL’s vision statement asserts that: “All Americans should be proficient in at least one language and culture in addition to English. For this

reason, foreign language education must be part of the core curriculum and be treated as central to the education of all children. To realize the vision, foreign language educators must strive for unity of purpose and they must take steps to realize fully the potential of professional status.” ACTFL publishes the journal *Foreign Language Annals* as well as a national newsletter.

CONTRIBUTIONS TO EDUCATION

ACTFL contributes to the field of education by disseminating information on the requirements for effective learning of a foreign language. The organization publishes *Foreign Language Annals* four times per year. The journal focuses on the advancement of foreign language teaching and learning, and serves the professionals in the field, including classroom instructors, researchers, and administrators who are involved both directly and indirectly in the teaching of foreign languages at all levels of instruction. The organization holds an annual conference around a specific theme such as “Celebrating our International Spirit.” There are five broad areas that address issues in the learning and understanding of foreign language. These are communication, culture, connection, comparisons, and communities. The Standards for Foreign Language Learning address the performances expected of students for each standard, and are elaborated upon below (ACTFL 2005).

STANDARDS FOR FOREIGN LANGUAGE LEARNING

1. Communication

- Students engage in conversations, provide and obtain information, express feelings and emotions, and exchange opinions.
- Students understand and interpret written and spoken language on a variety of topics.
- Students present information, concepts, and ideas to an audience of listeners or readers on a variety of topics.

2. Culture

- Students demonstrate an understanding of the relationship between the practices and perspectives of the culture studied.

- Students demonstrate an understanding of the relationship between the products and perspectives of the culture studied.

3. Connection

- Students reinforce and further their knowledge of other disciplines through the foreign language.
- Students acquire information and recognize the distinctive viewpoints that are only available through the foreign language and its cultures.

4. Comparisons

- Students demonstrate understanding of the nature of language through comparisons of the language studied and their own.
- Students demonstrate understanding of the concept of culture through comparisons of the cultures studied and their own.

5. Communities

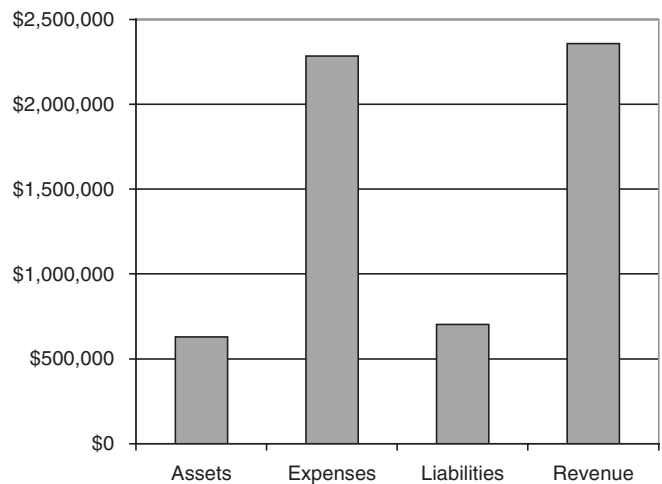
- Students use the language both within and beyond the school setting.
- Students show evidence of becoming lifelong learners by using the language for personal enjoyment and enrichment.

FINANCIAL INFORMATION

The most recent information filed by ACTFL indicates that the organization has over \$600 thousand in assets, \$2 million in expenses, \$700 thousand in liabilities, and over \$2 million in revenue for the 2001 calendar year (IRS 2002). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.1. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, interest on savings and securities, and rental income.

ACTFL receives a large part of its revenue from membership dues. Individual membership dues are \$65 annually. Institutional membership dues are \$100 annually. Additional information can be obtained online at www.actfl.org or at the following address:

Figure 31.1 **Financial Information for the American Council on the Teaching of Foreign Languages, Fiscal Year Ending 2002**



Assets (holdings): \$629,833
Expenses (amount paid): \$2,284,386
Liabilities (amount owed): \$701,530
Revenue (income): \$2,356,960

Source: IRS (2002).

ACTFL, 70 South Washington Street, Ste. 210, Alexandria, VA 22314.

INTERNATIONAL READING ASSOCIATION

The International Reading Association (IRA) was established in 1956. It is a nonprofit international organization conducting its business in English, French, and Spanish. The organization has approximately 90,000 members. Members of the IRA include teachers, reading specialists, psychologists, supervisors, librarians, parents, and administrators. It is the goal of IRA to promote literacy worldwide. The organization publishes five hard-copy journals (*The Reading Teacher*, *Journal of Adolescent and Adult Literacy*, *Reading Research Quarterly*, *Thinking Classroom/Peremena*, and *Lectura y Vida*) and one online journal (*Reading Online*). The numerous publications disseminate information relating to research on lit-

eracy development in early childhood, childhood, adolescence, and adulthood. The IRA is active in teacher education and professional development in both national and international venues.

CONTRIBUTIONS TO EDUCATION

IRA contributes to the field of education by disseminating information on teaching, learning, and assessment related to literacy. The organization's journals are designed to make the teaching of language accessible to professionals and parents in a variety of related fields. The IRA journals target specific age ranges (e.g., *Reading Teacher*, early childhood to age twelve), and integrate issues related to theory and practice in the teaching of reading. They have research-based suggestions that address issues and concerns related to instruction, curriculum, and assessment. The organization holds an annual conference, a one-day research conference, a world congress held biennially, and national and international meetings. IRA's standards have served as a model for numerous state and local agencies. These standards are used to guide the development of curricula, assessment, and instruction from preschool through college level literacy. There are five standards that address the professional development of individuals involved in literacy education. Each standard addresses what each professional needs to know and do in order to be effective in promoting literacy. The Standards for Reading Professionals are as follows (IRA 2004):

STANDARDS FOR READING PROFESSIONALS

1. Foundational Knowledge

- Demonstrate knowledge of psychological, sociological, and linguistic foundations of reading and writing processes and instruction.
- Demonstrate knowledge of reading research and histories of reading.
- Demonstrate knowledge of language development and reading acquisition and the variations related to cultural and linguistic diversity.
- Demonstrate knowledge of the major components of reading (phonemic awareness, word identification and phonics, vocabulary and background knowledge, fluency, compre-

hension strategies, and motivation) and how they are integrated in fluent reading.

2. Instructional Strategies and Curriculum Materials

- Use instructional grouping options (individual, small group, whole class, and computer-based) as appropriate for accomplishing given purposes.
- Use a wide range of instructional practices, approaches, and methods, including technology-based practices, for learners at different stages of development and from differing cultural and linguistic backgrounds.
- Use a wide range of curriculum materials in effective reading instruction for learners at different stages of reading and writing development and from different cultural and linguistic backgrounds.

3. Assessment, Diagnosis, and Evaluation

- Use a wide range of assessment tools and practices that range from individual and group standardized tests to individual and group informal classroom assessment strategies, including technology-based assessment tools.
- Place students along a developmental continuum and identify students' proficiencies and difficulties.
- Use assessment information to plan, evaluate, and revise effective instruction that meets the needs of all students, including those at different developmental stages and those from differing cultural and linguistic backgrounds.
- Effectively communicate results of assessments to specific individuals (students, parents, caregivers, colleagues, administrators, policymakers, policy officials, community, etc.).

4. Creating a Literate Environment

- Use students' interests, reading abilities, and backgrounds as foundations for the reading and writing program.
- Use a large supply of books, technology-based information, and non-print materials representing multiple levels, broad interests, and cultural and linguistic backgrounds.

- Model reading and writing enthusiastically as valued lifelong activities.
- Motivate learners to be lifelong readers.

5. Professional Development

- Display positive dispositions related to reading and the teaching of reading.
- Continue to pursue the development of professional knowledge and dispositions.
- Work with colleagues to observe, evaluate, and provide feedback on each other's practice.
- Participate in, initiate, implement, and evaluate professional development programs.

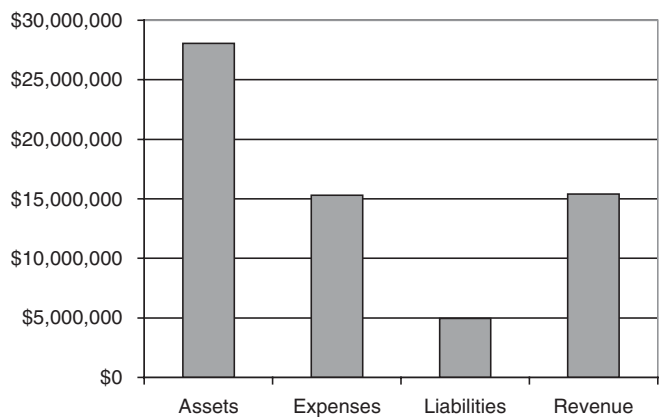
FINANCIAL INFORMATION

The most recent information filed by IRA indicates that the organization has over \$28 million in assets, \$15 million in expenses, nearly \$5 million in liabilities, and over \$15 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.2. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, interest on savings and securities, and rental income. IRA receives a large part of its revenue from membership dues. Individual membership dues are \$61 annually, and student membership is \$37 annually. Dues increase \$25 for each journal subscription. Additional information can be obtained online at www.reading.org or at the following address: IRA, 800 Barksdale Road, Newark, DE 19714.

INTERNATIONAL SOCIETY FOR TECHNOLOGY IN EDUCATION

The International Society for Technology in Education (ISTE) was established in 1979 by the merger of the International Association for Computing in Education and the International Council for Computers in Education. It is a nonprofit professional organization with approximately 10,000 members. ISTE's mission is to "Provid[e] leadership and service to improve teaching

Figure 31.2 **Financial Information for the International Reading Association, Fiscal Year Ending 2003**



Assets (holdings): \$28,050,372

Expenses (amount paid): \$15,290,533

Liabilities (amount owed): \$4,964,656

Revenue (income): \$15,390,658

Source: IRS (2003).

and learning by advancing the effective use of technology in education." ISTE publishes three quarterly refereed journals dedicated to technology and education (*Learning and Leading with Technology*, *Journal of Computing in Teacher Education*, *Journal of Research on Technology and Education*).

CONTRIBUTIONS TO EDUCATION

ISTE has made an extensive investment in the development of standards in technology. The organization has developed standards for students, teachers, and administrators. The student standards are divided into three performance categories that introduce, reinforce, and are to be mastered by students. The standards for teachers are designed to meet the needs of the initial teacher who is beginning a professional career. The standards address the application of technology in educational settings. The goal of the teacher education standards in technology is to develop basic concepts, knowledge, skills, and dispositions. The educational technology standards and performance indicators for administrators deal with broad issues that affect the integration of technology at a systems level. The technology standards for administrators

cover concepts such as leadership and vision, learning and teaching, productivity and professional practice, assessment and evaluation, support, management, operations, and social, legal, and ethical issues. The eighteen ISTE standards, six in each area mentioned above, are as follows:

TECHNOLOGY FOUNDATION STANDARDS FOR ALL STUDENTS

1. Basic Operations and Concepts
 - Students demonstrate a sound understanding of the nature and operation of technology systems.
 - Students are proficient in the use of technology.
2. Social, Ethical, and Human Issues
 - Students understand the ethical, cultural, and societal issues related to technology.
 - Students practice responsible use of technology systems, information, and software.
 - Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
3. Technology Productivity Tools
 - Students use technology tools to enhance learning, increase productivity, and promote creativity.
 - Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.
4. Technology Communications Tools
 - Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
 - Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
5. Technology Research Tools
 - Students use technology to locate, evaluate, and collect information from a variety of sources.
 - Students use technology tools to process data and report results.
 - Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.
6. Technology Problem-Solving and Decision-making Tools
 - Students use technology resources for solving problems and making informed decisions.
 - Students employ technology in the development of strategies for solving problems in the real world.

EDUCATIONAL TECHNOLOGY STANDARDS AND PERFORMANCE INDICATORS FOR ALL TEACHERS

1. Technology Operations and Concepts. Teachers demonstrate a sound understanding of technology operations and concepts. Teachers:
 - Demonstrate introductory knowledge, skills, and understanding of concepts related to technology (as described in the ISTE National Education Technology Standards for Students).
 - Demonstrate continual growth in technology knowledge and skills to stay abreast of current and emerging technologies.
2. Planning and Designing Learning Environments and Experiences. Teachers plan and design effective learning environments and experiences supported by technology. Teachers:
 - Design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners.
 - Apply current research on teaching and learning with technology when planning learning environments and experiences.
 - Identify and locate technology resources and evaluate them for accuracy and suitability.
 - Plan for the management of technology resources within the context of learning activities.
 - Plan strategies to manage student learning in a technology-enhanced environment.

3. Teaching, Learning, and the Curriculum. Teachers implement curriculum plans that include methods and strategies for applying technology to maximize student learning. Teachers:

- Facilitate technology-enhanced experiences that address content standards and student technology standards.
- Use technology to support learner-centered strategies that address the diverse needs of students.
- Apply technology to develop students' higher order skills and creativity.
- Manage students' learning activities in a technology-enhanced environment.

4. Assessment and Evaluation. Teachers apply technology to facilitate a variety of effective assessment and evaluation strategies. Teachers:

- Apply technology in assessing student learning of subject matter using a variety of assessment techniques.
- Use technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning.
- Apply multiple methods of evaluation to determine students' appropriate use of technology resources for learning, communication, and productivity.

5. Productivity and Professional Practice. Teachers use technology to enhance their productivity and professional practice. Teachers:

- Use technology resources to engage in ongoing professional development and lifelong learning.
- Continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning.
- Apply technology to increase productivity.
- Use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning.

6. Social, Ethical, Legal, and Human Practices. Teachers understand the social, ethical, legal, and human issues surrounding the use of tech-

nology in PK–12 schools and apply those principles in practice. Teachers:

- Model and teach legal and ethical practices related to technology use.
- Apply technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.
- Identify and use technology resources that affirm diversity.
- Promote safe and healthy use of technology resources.
- Facilitate equitable access to technology resources for all students.

EDUCATIONAL TECHNOLOGY STANDARDS AND PERFORMANCE INDICATORS FOR ADMINISTRATORS

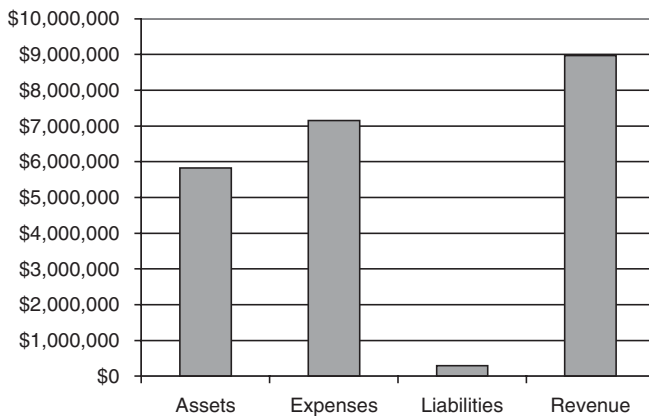
1. Leadership and Vision. Educational leaders inspire a shared vision for comprehensive integration of technology and foster an environment and culture conducive to the realization of that vision. Educational leaders:

- Facilitate the shared development by all stakeholders of a vision for technology use and widely communicate that vision.
- Maintain an inclusive and cohesive process to develop, implement, and monitor a dynamic, long-range, and systemic technology plan to achieve the vision.
- Foster and nurture a culture of responsible risk taking and advocate policies promoting continuous innovation with technology.
- Use data in making leadership decisions.
- Advocate for research-based effective practices in use of technology.
- Advocate on the state and national levels for policies, programs, and funding opportunities that support implementation of the district technology plan.

2. Learning and Teaching. Educational leaders ensure that curricular design, instructional strategies, and learning environments integrate appropriate technologies to maximize learning and teaching. Educational leaders:

- Identify, use, evaluate, and promote appropriate technologies to enhance and support instruction and standards-based curriculum leading to high levels of student achievement.
 - Facilitate and support collaborative technology-enriched learning environments conducive to innovation for improved learning.
 - Provide for learner-centered environments that use technology to meet the individual and diverse needs of learners.
 - Facilitate the use of technologies to support and enhance instructional methods that develop higher-level thinking, decisionmaking, and problem-solving skills.
 - Provide for and ensure that faculty and staff take advantage of quality professional learning opportunities for improved learning and teaching with technology.
3. Productivity and Professional Practice. Educational leaders apply technology to enhance their professional practice and to increase their own productivity and that of others. Educational leaders:
- Model the routine, intentional, and effective use of technology.
 - Employ technology for communication and collaboration among colleagues, staff, parents, students, and the larger community.
 - Create and participate in learning communities that stimulate, nurture, and support faculty and staff in using technology for improved productivity.
 - Engage in sustained, job-related professional learning using technology resources.
 - Maintain awareness of emerging technologies and their potential uses in education.
 - Use technology to advance organizational improvement.
4. Support, Management, and Operation. Educational leaders ensure the integration of technology to support productive systems for learning and administration. Educational leaders:
- Develop, implement, and monitor policies and guidelines to ensure compatibility of technologies.
 - Implement and use integrated technology-based management and operations systems.
 - Allocate financial and human resources to ensure complete and sustained implementation of the technology plan.
 - Integrate strategic plans, technology plans, and other improvement plans and policies to align efforts and leverage resources.
 - Implement procedures to drive continuous improvement of technology systems and to support technology replacement cycles.
5. Assessment and Evaluation. Educational leaders use technology to plan and implement comprehensive systems of effective assessment and evaluation. Educational leaders:
- Use multiple methods to assess and evaluate appropriate uses of technology resources for learning, communication, and productivity.
 - Use technology to collect and analyze data, interpret results, and communicate findings to improve instructional practice and student learning.
 - Assess staff knowledge, skills, and performance in using technology and use results to facilitate quality professional development and to inform personnel decisions.
 - Use technology to assess, evaluate, and manage administrative and operational systems.
6. Social, Legal, and Ethical Issues. Educational leaders understand the social, legal, and ethical issues related to technology and model responsible decisionmaking related to these issues. Educational leaders:
- Ensure equity of access to technology resources that enable and empower all learners and educators.
 - Identify, communicate, model, and enforce social, legal, and ethical practices to promote responsible use of technology.
 - Promote and enforce privacy, security, and online safety related to the use of technology.
 - Promote and enforce environmentally safe and healthy practices in the use of technology.
 - Participate in the development of policies that clearly enforce copyright law and assign ownership of intellectual property developed with district resources.

Figure 31.3 **Financial Information for the International Society for Technology in Education, Fiscal Year Ending 2003**



Assets (holdings): \$5,828,417

Expenses (amount paid): \$7,155,411

Liabilities (amount owed): \$296,224

Revenue (income): \$8,973,862

Source: IRS (2003).

FINANCIAL INFORMATION

The most recent information filed by ISTE indicates that the Organization has over \$5.8 million in assets, \$7 million in expenses, nearly \$300 thousand in liabilities, and \$9 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.3. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, interest on savings and securities, and rental income.

ISTE receives a large part of its revenue from membership dues as well as both private and government grants. Individual membership dues are \$58 annually. Additional information can be obtained online at www.iste.org or at the following address: ISTE, 480 Chamelton Street, Eugene, OR 97401.

NATIONAL COUNCIL FOR THE SOCIAL STUDIES

The National Council for the Social Studies (NCSS) was established in 1921. It is a nonprofit profes-

sional organization with approximately 25,000 members. NCSS's mission is to examine the problems inherent in the teaching of social studies at the elementary and secondary levels, and in programs of initial and professional teacher education. NCSS publishes a monthly refereed journal, entitled *Social Education*, dedicated to the issues and interests in teaching the social studies, and two quarterly journals entitled *Social Studies and the Young Learner* and *Theory and Research in Social Education*. They also publish yearbooks, bulletins, curriculum series, and a variety of pamphlets on issues dealing with matters of pedagogy.

CONTRIBUTIONS TO EDUCATION

NCSS contributes to the field of education by sponsoring public discussions, articles, reports, surveys, and research related to the teaching of social studies. The organization's journals deal with aspects of social studies education, such as curriculum, content, pedagogy, and the review of materials that can be used in the teaching of social studies. The organization has a large interest group that includes many individuals from the social sciences such as civics, economics, political science, psychology, sociology, anthropology, history, geography, and law. NCSS holds an annual conference around a specific theme such as "Democracy and Diversity: Social Studies in Action." NCSS published *Expectations of Excellence: Curriculum Standards for Social Studies* (1994). The publication presents ten thematic standards for achieving excellence in social studies, and explains the purpose, organization, and the application of the standards. The standards deal with issues related to culture, geography, change, environments, individuals, institutions, governance, consumerism, technology, and civics. The ten standards are:

NCSS Standards

1. Culture. Social studies programs should include experiences that provide for the study of culture and cultural diversity.
2. Time, Continuity, and Change. Social studies programs should include experiences that provide for the study of the ways human beings view themselves in and over time.
3. People, Places, and Environments. Social stud-

ies programs should include experiences that provide for the study of people, places, and environments.

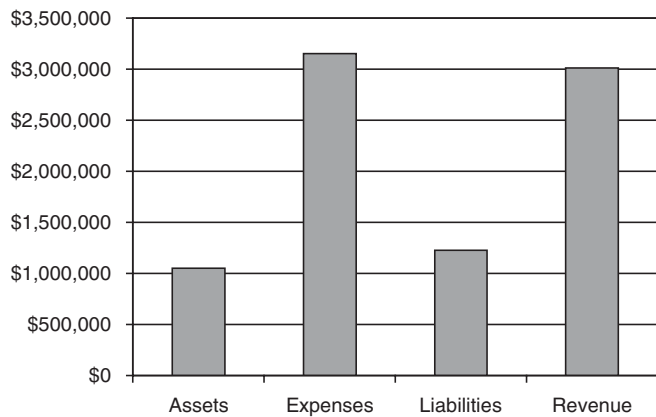
4. Individual Development and Identity. Social studies programs should include experiences that provide for the study of individual development and identity.
5. Individuals, Groups, and Institutions. Social studies programs should include experiences that provide for the study of interactions among individuals, groups, and institutions.
6. Power, Authority, and Governance. Social studies programs should include experiences that provide for the study of how people create and change structures of power, authority, and governance.
7. Production, Distribution, and Consumption. Social studies programs should include experiences that provide for the study of how people organize for the production, distribution, and consumption of goods and services.
8. Science, Technology, and Society. Social studies programs should include experiences that provide for the study of relationships among science, technology, and society.
9. Global Connections. Social studies programs should include experiences that provide for the study of global connections and interdependence.
10. Civic Ideals and Practices. Social studies programs should include experiences that provide for the study of the ideals, principles, and practices of citizenship in a democratic republic.

FINANCIAL INFORMATION

The most recent information filed by NCSS indicates that the organization has over \$1 million in assets, \$3 million in expenses, \$1 million in liabilities, and \$3 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in figure 31.4. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, interest on savings and securities, and rental income.

NCSS receives a large part of its revenue from membership dues as well as private and governmental grants. Individual comprehensive membership dues are \$70

Figure 31.4 **Financial Information for the National Council for the Social Studies, Fiscal Year Ending 2003**



Assets (holdings): \$1,052,795
Expenses (amount paid): \$3,152,388
Liabilities (amount owed): \$1,228,406
Revenue (income): \$3,010,175

Source: IRS (2003).

annually. Annual dues for retirees and students are \$29. Institutional membership dues are \$87 annually. Additional information can be obtained online at www.ncss.org or at the following address: NCSS, 8555 16th Street, Ste. 500, Silver Spring, MD, 20910.

NATIONAL COUNCIL OF TEACHERS OF ENGLISH

The National Council of Teachers of English (NCTE) was established in 1911. It is a nonprofit professional organization with over 60,000 members. The organization is devoted to improvement, instruction, and learning of English and the language arts. NCTE's mission is the following: "The Council promotes the development of literacy, the use of language to construct personal and public worlds and to achieve full participation in society, through the learning and teaching of English and the related arts and sciences of language." NCTE publishes a variety of journals and periodicals that discuss issues related to teaching English and language arts. NCSS publishes refereed journals entitled *English Journal*, *Language Arts*, *College English*, *College*

Composition and Communication, English Education, Voices in the Middle, English Leadership Quarterly, Talking Points, Classroom Notes Plus, Research in the Teaching of English, School Talk, and Teaching English in the Two-Year College. Each publication is dedicated to the issues and interests in teaching English and language arts from preschool through college and initial to professional programs in teacher education.

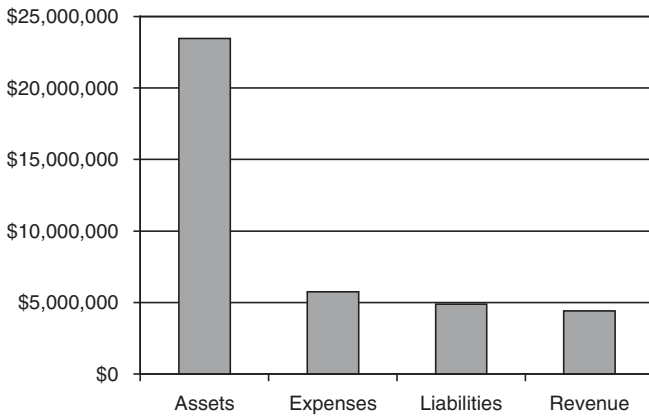
CONTRIBUTIONS TO EDUCATION

NCTE contributes to the field of education by disseminating information on the teaching, learning, and assessment of English and language arts. The organization's twelve journals are designed to make the teaching of English and the language arts accessible to all professionals interested in the development and promotion of literacy. Each journal targets a specific grade band (e.g., *Language Arts*, preschool through grade 8) and focuses on novel ideas that address issues and concerns in the teaching of English and related areas. The organization holds an annual conference around a specific theme such as "Significance." NCTE's national standards are used to guide the development of curricula, assessment, and instruction from preschool through college level English. It should be noted that the NCTE standards are not strict prescriptions for instruction and learning. Rather, they were designed to allow for the expression of creativity and experimentation, which is considered essential to teaching and learning. In total, there are twelve NCTE standards:

NCTE STANDARDS

1. Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
2. Students read a wide range of literature from many periods in many genres to build an understanding of the many dimensions (e.g., philosophical, ethical, aesthetic) of human experience.
3. Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).
4. Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
5. Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
6. Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and non-print texts.
7. Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.
8. Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.
9. Students develop an understanding of and respect for diversity in language use, patterns, and dialects across cultures, ethnic groups, geographic regions, and social roles.
10. Students whose first language is not English make use of their first language to develop competency in the English language arts and to develop understanding of content across the curriculum.
11. Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities.
12. Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).

Figure 31.5 **Financial Information for the National Council of Teachers of English, Fiscal Year Ending 2003**



Assets (holdings): \$23,451,970

Expenses (amount paid): \$5,755,030

Liabilities (amount owed): \$4,875,419

Revenue (income): \$4,415,050

Source: IRS (2003).

FINANCIAL INFORMATION

The most recent information filed by NCTE indicates that the organization has over \$23 million in assets, \$5.7 million in expenses, \$4.8 million in liabilities, and \$4.4 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.5. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, interest on savings and securities, and rental income.

NCTE receives a large part of its revenue from membership dues as well as both private and government grants. Individual membership dues are \$40 annually, and students and seniors can become members by paying an annual fee of \$20. Institutional fees are based on the number of journals ordered on an annual basis. Additional information can be obtained online at www.ncte.org or at the following address: NCTE, 1111 W. Kenyon Road, Urbana, IL 61801-1096.

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

The National Council of Teachers of Mathematics (NCTM) was established in 1920. With approximately 100,000 members, NCTM is one of the largest nonprofit subject-matter-based teacher organizations. As the organization states in its mission: “The National Council of Teachers of Mathematics is a public voice of mathematics education, providing vision, leadership, and professional development to support teachers in ensuring mathematics learning of the highest quality for all students.” NCTM has six publications in circulation. These publications include four journals, which are grade band specific (*Journal for Research in Mathematics Education*, *Mathematics Teacher*, *Mathematics in the Middle School*, and *Teaching Children Mathematics*), one yearbook (*National Council of Teachers of Mathematics Yearbook*), and one newsletter (*NCTM News Bulletin*).

CONTRIBUTIONS TO EDUCATION

NCTM contributes to the field of education by disseminating information on the teaching, learning, and assessment of mathematics. The organization’s journals are designed to make the teaching of mathematics accessible to professionals in the fields of general education and mathematics. Each journal targets a specific grade band (e.g., *Mathematics Teacher*, grades 9–12), and focuses on novel ideas that address issues and concerns in the teaching of mathematical concepts. The organization holds an annual conference around a specific theme such as “Embracing Mathematics Diversity.” NCTM was one of the first organizations to develop national standards that have served as a model for other national organizations, states, and local authorities. These standards are used to guide the development of curricula, assessment, and instruction from preschool through college level mathematics. There are six principles and ten standards that guide methodological approaches in mathematical instruction. The principles suggest which components are necessary to achieve excellence in mathematics education. The organization presents the principles as guides and tools for making decisions with regard to the teaching, learning, and as-

assessment of mathematics. The six NCTM Principles for School Mathematics (NCTM 2000, 11) are as follows:

The NCTM Principles

1. **Equity.** Excellence in mathematics education requires equity—high expectations and strong support for all students.
2. **Curriculum.** A curriculum is more than a collection of activities: it must be coherent, focused on important mathematics, and well articulated across the grades.
3. **Teaching.** Effective mathematics teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well.
4. **Learning.** Students must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge.
5. **Assessment.** Assessment should support the learning of important mathematics and furnish useful information to both teachers and students.
6. **Technology.** Technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students' learning.

NCTM Standards

The NCTM Standards address the mathematical concepts and processes that all students should learn and understand as they progress through school. There are five content standards and five process-skill or theme standards, for a total of ten standards. The standards remain the same and spiral through the grade levels. That is, each standard is addressed in the grade bands of Pre-K through grade 2, grades 3 through 5, grades 6 through 8, and grades 9 through 12. The ten NCTM content and process-skill standards (NCTM 2000, 11) are:

1. **Content Standards**
 - **Number and Operations.** The concept of number and the functions related to addition, subtraction, multiplication and division.
 - **Algebra.** Patterns and relationships with regard to sequences; manipulating equations,

and working with unknown quantities.

- **Geometry.** The study of space and location.
- **Measurement.** The comparison of magnitudes of objects.
- **Data Analysis and Probability.** Making sense from gathered information, and the likelihood of obtaining a result.

2. Process-Skill Standards

- **Problem Solving.** The process of developing and using a method to obtain a solution.
- **Reasoning and Proof.** Supporting an answer with evidence.
- **Communication.** The process of reporting and explaining through dialogue.
- **Connections.** Finding relationships between different mathematical areas.
- **Representation.** Developing unique interpretations and descriptions of mathematical ideas.

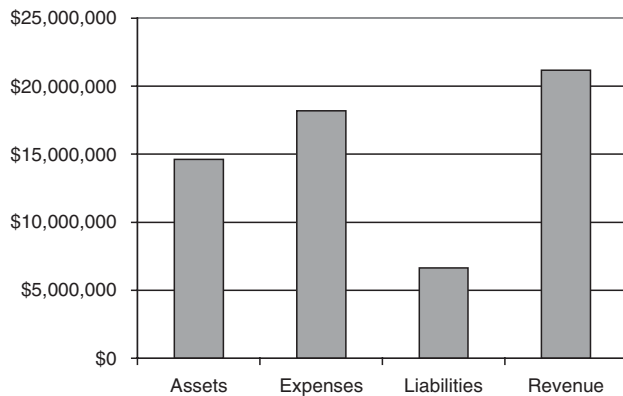
The principles and standards in mathematics were developed to change the way mathematics is taught, learned, and assessed by students and teachers.

FINANCIAL INFORMATION

The most recent information filed by NCTM indicates that the organization has over \$21 million in assets, \$18 million in expenses, \$6.6 million in liabilities, and \$14.6 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.6. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, interest on savings and securities, and rental income.

NCTM receives a large part of its revenue from membership dues. Annual dues for the individual receiving one school journal are \$72 and individuals receiving one research journal are \$94. Institutions pay \$99 annually. Institution rates for one research journal are \$154. Kindergarten through eighth grade institutional rates are \$99 for one school journal. NCTM also accommodates students and senior citizens. Student rates are \$36 and include online access to one school journal, Principles and Standards for School Mathematics, student math notes, and “ON-

Figure 31.6 **Financial Information for the National Council of Teachers of Mathematics, Fiscal Year Ending 2003**



Assets (holdings): \$14,614,381

Expenses (amount paid): \$18,197,842

Liabilities (amount owed): \$6,632,388

Revenue (income): \$21,169,455

Source: IRS (2003).

Math.” Dues for retired members are \$25. Members receive the *NCTM News Bulletin*. Additional information can be obtained online at www.nctm.org or at the following address: NCTM, 1906 Association Drive, Reston, VA 20191-1502.

NATIONAL SCIENCE TEACHERS ASSOCIATION

The National Science Teachers Association (NSTA) serves teachers and students of all science-related branches. Founded in 1944, NSTA has a membership of approximately 53,000. The organization issues six publications—five journals and one newsletter. These publications include the *Journal of College Science Teaching* with a circulation of 5,600, *Science and Children* with a circulation of 24,000, *Science Scope* (for middle-school educators) with a circulation of 16,000, the *Science Teacher* (for high school educators) with a circulation of 30,000, *Quantum* with a circulation of 10,000, and the bimonthly newsletter *NSTA Reports* with a circulation of 53,000. NSTA also holds

one national meeting and three regional meetings per year.

CONTRIBUTIONS TO EDUCATION

NSTA contributes to the field of education by disseminating information on the teaching, learning, and assessment of science and its subdisciplines. The organization’s journals are designed to make the teaching of science-related subjects accessible to professionals in the fields of general education, science, and technology. The NSTA journals target specific grade bands (e.g., *Science Scope*, grades 5–9), which focus on novel ideas that address issues and concerns related to instruction, curriculum, and assessment in science education. The organization holds an annual conference around a specific theme such as “Connecting Science to the World.” NSTA’s standards have served as a model for numerous state and local agencies. They are used to guide the development of curricula, assessment, and instruction from preschool through college level science. There are six overarching areas that address science teaching, professional development for teachers of science, standards for assessment in science education, standards for science content, standards for science education programs, and standards for science education systems. *The National Science Education Standards* represent a goal of what all students should achieve to be scientifically literate. Each of the six areas that the standards address are elaborated below (NSES 1996):

NSES Standards

1. The Science Teaching Standards

- The planning of inquiry-based science programs
- The ability to guide and facilitate student learning
- The assessment of teaching and student learning
- The development of environments conducive for learning science
- The establishment of communities of science learners
- The planning and development of the school science program

2. The Professional Development Standards

- The learning of science content through inquiry
- The integration of knowledge about science with knowledge about learning, pedagogy, and students
- The development of the understanding and ability of lifelong learning
- The coherence and integration of professional development programs

3. The Assessment Standards

- The consistency of assessments with the decisions they are designed to inform (the purpose of the assessment instrument, the use of the assessment instrument, and the interpretation of the results match the instrument's intended design)
- The assessment of both achievement and opportunity to learn science
- The match between the technical quality of the data collected and the consequences of the actions taken on the basis of those data
- The fairness of assessment practices
- The soundness of inferences made from assessments about student achievement and opportunity to learn

4. The Science Content Standards

- Unified Concepts and Processes in Science
- Learning Science as Inquiry
- Physical Science Related Content
- Life Science Related Content
- Earth and Space Science
- Science and Technology
- Science in Personal and Social Perspective
- History and Nature of Science

5. The Science Education Program Standards

- The consistency of the science program with the other standards across grade levels
- The inclusion of all content standards in a variety of curricula that are developmentally appropriate, interesting, relevant to students' lives, organized around inquiry, and connected with other school subjects
- The coordination of the science programs with mathematics education

- The provision of appropriate and sufficient resources to all students
- The provision of equitable opportunities for all students to learn the standards
- The development of communities that encourage, support, and sustain teachers

6. The Science Education System Standards

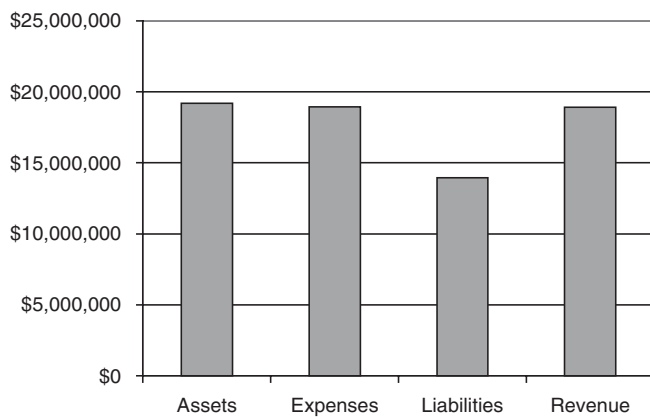
- The congruency of policies that influence science education with the teaching, professional development, assessment, content, and program standards
- The coordination of science education policies within and across agencies, institutions, and organizations
- The continuity of science education policies over time
- The provision of resources to support science education policies
- The equity embodied in science education policies
- The possible unanticipated effects of policies on science education
- The responsibility of individuals to achieve the new vision of science education portrayed in the standards
- The National Science Education Standards were developed to change the way science is taught, learned, and assessed by students and teachers.

Financial Information

The most recent information filed by NSTA indicates that the organization has over \$19 million in assets, nearly \$19 million in expenses, \$14 million in liabilities, and \$19 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.7. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, interest on savings and securities, and rental income.

NSTA receives a large part of its revenue from membership dues. Individual membership dues are \$72 annually. Annual dues for new teachers, retir-

Figure 31.7 **Financial Information for the National Science Teachers Association, Fiscal Year Ending 2003**



Assets (holdings): \$19,182,245

Expenses (amount paid): \$18,937,542

Liabilities (amount owed): \$13,959,594

Revenue (income): \$18,905,006

Source: IRS (2003).

ees, and students are \$31. Institutional membership dues are \$82 annually. Additional information can be obtained online at www.nsta.org or at the following address: NSTA, 1840 Wilson Boulevard, Arlington, VA 22201-3000.

Stephen J. Farenga and Daniel Ness

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CHILD RELATED ORGANIZATIONS

Child related organizations include associations that foster and promote best practices for students in the field of teacher preparation. This entry includes four organizations. They are the National Association for the Education of Young Children (NAEYC), the Association for Childhood Education International (ACEI), the National Middle School Association (NMSA), and the Council for Exceptional Children (CEC). As indicated in the profiles below, these organizations vary in size, educational missions, contributions to the field, and financial status. A review of the broad standards for each of the organizations suggests the possible overlap in educational missions, student populations served, and teacher preparation.

NATIONAL ASSOCIATION FOR THE EDUCATION OF YOUNG CHILDREN

The National Association for the Education of Young Children (NAEYC) is the largest organization that supports teachers of a specific age or grade level. Founded in 1926, NAEYC is the largest organization in the world (with over 100,000 members) devoted to the education and development of young children. Moreover, as a nonprofit organization, it serves as a national network with approximately 450 local, state, and regional affiliates, and as an international partner with similar organizations in other world regions. NAEYC's mission "is to serve and act on behalf of the needs, rights and well-being of all young children with primary focus on the provision of educational and developmental services and resources." NAEYC publishes two journals (*Young Children* and the *Early Childhood Research Quarterly*) as well as other early childhood related media.

CONTRIBUTIONS TO EDUCATION

NAEYC contributes to the field of education by disseminating information on the teaching, learning, assessment, and the development of young children from birth through age eight. In addition, NAEYC influences the professional growth of teachers and others concerned with the development of young children. The organization's journals are designed to focus on trends in early childhood education. *Young Children* is a bimonthly practitioner-based journal that focuses on issues dealing with early childhood and development. The journal *Early Childhood Research Quarterly* deals with research, theory, practices, and critical issues in early childhood education. The organization holds an annual international conference to allow all interested parties in the field of early childhood to network and be exposed to the critical issues related to early childhood development. NAEYC's standards have served as a model for numerous state and local agencies. These standards are used to guide the development of curricula, assessment, and instruction in issues related to early childhood education. There are five broad standards that address the following: promoting child development and learning; building family and community relationships; observing, documenting, and assessing to support young children and families; teaching and learning; and becoming a professional. The NAEYC standards are designed to measure outcomes, professionalism, knowledge, skills or abilities, and dispositions (National Association for the Education of Young Children 1994). Each of the five domains and their descriptions are elaborated below:

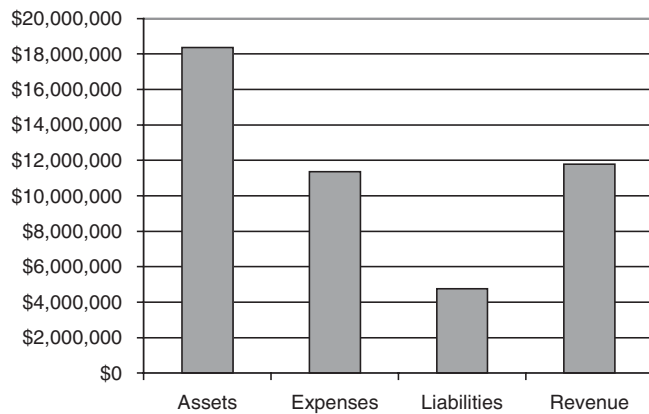
NAEYC STANDARDS

1. Promoting child development and learning. Candidates use their understanding of young children's characteristics and needs, and of multiple interacting influences on children's development and learning, to create environments that are healthy, respectful, supportive, and challenging for all children.
2. Building family and community relationships. Candidates know about, understand, and value the importance and complex characteristics of children's families and communities. They use this understanding to create

respectful, reciprocal relationships that support and empower families, and to involve all families in their children's development and learning.

3. Observing, documenting, and assessing to support young children and families. Candidates know about and understand the goals, benefits, and uses of assessment. They know about and use systematic observations, documentation, and other effective assessment strategies in a responsible way, in partnership with families and other professionals, to positively influence children's development and learning.
4. Teaching and Learning. Candidates integrate their understanding of and relationships with children and families; their understanding of developmentally effective approaches to teaching and learning; and their knowledge of academic disciplines to design, implement, and evaluate experiences that promote positive development and learning for all young children as follows:
 - Connecting with children and families. Candidates know, understand, and use positive relationships and supportive interactions as the foundation for their work with young children.
 - Using developmentally effective approaches. Candidates know, understand, and use a wide array of effective approaches, strategies, and tools to support young children's development and learning.
 - Understanding content knowledge in early education. Candidates understand the importance of each content area in young children's learning. They know the essential concepts, inquiry tools, and structure of content areas including academic subjects and can identify resources to deepen their understanding.
 - Building meaningful curriculum. Candidates use their own knowledge and other resources to design, implement, and evaluate meaningful, challenging curriculum that promotes comprehensive developmental and learning outcomes for all young children.
5. Becoming a professional. Candidates identify and conduct themselves as members of the early

Figure 31.8 **Financial Information for the National Association for the Education of Young Children, Fiscal Year Ending 2002**



Assets (holdings): \$18,367,852

Expenses (amount paid): \$11,370,195

Liabilities (amount owed): \$4,764,569

Revenue (income): \$11,778,027

Source: IRS (2002).

childhood profession. They know and use ethical guidelines and other professional standards related to early childhood practice. They are continuous, collaborative learners who demonstrate knowledge, reflective, and critical perspectives on their work, making informed decisions that integrate knowledge from a variety of sources. They are informed advocates for sound educational practices and policies.

FINANCIAL INFORMATION

The most recent information filed by NAEYC indicates that the organization has over \$18.3 million in assets, \$11.3 million in expenses, \$4.7 million in liabilities, and over \$11.7 million in revenue for the 2001 calendar year (IRS 2002). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.8. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, and interest on savings and securities.

NAEYC receives a large part of its revenue from membership dues. The organization has an extensive menu of membership options. Membership cat-

egories include comprehensive, regular, and student. Dues are dependent upon the county and state in which one lives. Additional information can be obtained online at www.naeyc.org or at the following address: NAEYC, 1509 16th Street NW, Washington, DC 20036.

ASSOCIATION FOR CHILDHOOD EDUCATION INTERNATIONAL

The Association for Childhood Education International (ACEI) was established in 1892. Originally established as the International Kindergarten Union, the ACEI is the oldest professional association having to do with age-based organizations in the United States. It is a nonprofit professional organization with approximately 11,000 members. ACEI's mission is "to promote and support in the global community the optimal education and development of children, from birth through early adolescence, and to influence the professional growth of educators and the efforts of others who are committed to the needs of children in a changing society." ACEI publishes two journals (*Childhood Education* and the *Journal of Research in Childhood Education*) as well as a series of Professional Focus newsletters in the fields of infancy, pre-kindergarten and kindergarten, elementary school, middle school, inclusive education, and teacher education.

CONTRIBUTIONS TO EDUCATION

ACEI contributes to the field of education by disseminating information on the teaching, learning, assessment, and the development of children from infancy through middle childhood. In addition, ACEI influences the professional growth of teachers and others concerned with the development of children. The organization's journals are designed to focus on trends in childhood education. Published since 1924 and with a circulation of six per year, the journal *Childhood Education* focuses on issues dealing with classroom practices, pedagogical techniques, child development, children and families, reviews of the current literature in childhood, and useful issues dealing with classroom practice. The

journal *Research in Childhood Education* is published twice per year, and deals with research, theory, and practice in childhood education. The organization holds an annual international conference around a specific theme such as “The Future of Education: Government, Pedagogy, and Practice.” ACEI’s standards have served as a model for numerous state and local agencies. These standards are used to guide the development of curricula, assessment, and instruction in issues related to childhood education. There are five overarching standards that address development, learning, and motivation; curriculum; instruction; assessment; and professionalism. The ACEI standards are designed to measure the knowledge, skills or abilities, dispositions, and effect on student learning (See National Council for the Accreditation of Teacher Education 2000). Each of the five domains and their descriptions are elaborated below:

ACEI Standards

1. Development, Learning, and Motivation. Candidates know, understand, and use the major concepts, principles, theories, and research related to development of children and young adolescents to construct learning opportunities that support individual students’ development, acquisition of knowledge, and motivation.

2. Curriculum

- English language arts. Candidates demonstrate a high level of competence in use of English language arts and they know, understand, and use concepts from reading, language, and child development to teach reading, writing, speaking, viewing, listening, and thinking skills, and to help students successfully apply their developing skills to many different situations, materials, and ideas.

- Science. Candidates know, understand, and use fundamental concepts in the subject matter of science—including physical, life, and earth and space sciences—as well as concepts in science and technology, science in personal and social perspectives, the history and nature of science, the unifying concepts of science, and the inquiry processes scientists use in the discovery of new knowledge to build a base for scientific and technological literacy.

- Mathematics. Candidates know, understand, and use the major concepts, procedures, and reasoning processes of mathematics that define number systems and number sense, geometry, measurement, statistics and probability, and algebra in order to foster student understanding and use of patterns, quantities, and spatial relationships that can represent phenomena, solve problems, and manage data.

- Social studies. Candidates know, understand, and use the major concepts and modes of inquiry from the social studies—the integrated study of history, geography, the social sciences, and other related areas—to promote elementary students’ abilities to make informed decisions as citizens of a culturally diverse democratic society and interdependent world.

- The arts. Candidates know, understand, and use—as appropriate to their own knowledge and skills—the content, functions, and achievements of dance, music, theater, and the several visual arts as primary media for communication, inquiry, and insight among elementary students.

- Health education. Candidates know, understand, and use the major concepts in the subject matter of health education to create opportunities for student development and practice of skills that contribute to good health.

- Physical education. Candidates know, understand, and use—as appropriate to their own understanding and skills—human movement and physical activity as central elements to foster active, healthy lifestyles and enhanced quality of life for elementary students.

- Connections across the curriculum. Candidates know, understand, and use the connections among concepts, procedures, and applications from content areas to motivate elementary students, build understanding, and encourage the application of knowledge, skills, tools, and ideas to real world issues.

3. Instruction

- Integrating and applying knowledge for instruction. Candidates plan and implement instruction based on knowledge of students, learning theory, subject matter, curricular goals, and community.

- Adaptation to diverse students. Candidates understand how elementary students differ in their development and approaches to learning, and create

instructional opportunities that are adapted to diverse students.

- Development of critical thinking, problem solving, and performance skills. Candidates understand and use a variety of teaching strategies that encourage elementary students' development of critical thinking, problem solving, and performance skills.

- Active engagement in learning. Candidates use their knowledge and understanding of individual and group motivation and behavior among students at the K–6 level to foster active engagement in learning, self-motivation, and positive social interaction and to create supportive learning environments.

- Communication to foster learning. Candidates use their knowledge and understanding of effective verbal, nonverbal, and media communication techniques to foster activity inquiry, collaboration, and supportive interaction in the elementary classroom.

4. Assessment. Candidates know, understand, and use formal and informal assessment strategies to plan, evaluate, and strengthen instruction that will promote continuous intellectual, social, emotional, and physical development of each elementary student.

5. Professionalism

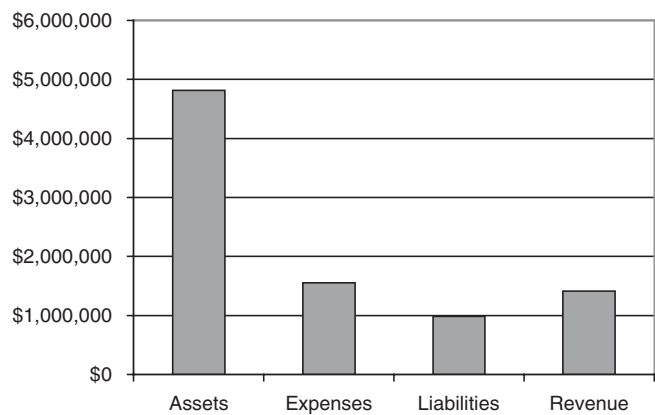
- Practices and behaviors of developing career teachers. Candidates understand and apply practices and behaviors that are characteristic of developing career teachers.

- Reflection and evaluation. Candidates are aware of and reflect on their practice in light of research on teaching and resources available for professional learning; they continually evaluate the effects of their professional decisions and actions on students, parents, and other professionals in the learning community and actively seek out opportunities to grow professionally.

- Collaboration with families. Candidates know the importance of establishing and maintaining a positive collaborative relationship with families to promote the intellectual, social, emotional, and physical growth of children.

- Collaboration with colleagues and the community. Candidates foster relationships with school col-

Figure 31.9 **Financial Information for the Association for Childhood Education International, Fiscal Year Ending 2002**



Assets (holdings): \$4,814,235
Expenses (amount paid): \$1,554,852
Liabilities (amount owed): \$983,622
Revenue (income): \$1,415,536

Source: IRS (2002).

leagues and agencies in the larger community to support students' learning and well-being.

FINANCIAL INFORMATION

The most recent information filed by ACEI indicates that the organization has over \$4.8 million in assets, \$1.5 million in expenses, nearly \$1 million in liabilities, and over \$1.4 million in revenue for the 2001 calendar year (IRS 2002). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.9. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, and interest on savings and securities.

ACEI receives a large part of its revenue from membership dues. Individual membership dues are \$45 annually for the professional. Institutional membership dues are \$100 annually. Membership dues for students and retirees are \$26 and \$23, respectively. Additional information can be obtained online at www.acei.org or at the following address: ACEI, 17904 Georgia Avenue, Suite 215, Olney, MD 20832.

NATIONAL MIDDLE SCHOOL ASSOCIATION

The National Middle School Association (NMSA) was established in 1973. NMSA deals with issues related to middle level education, particularly the educational and developmental needs of young adolescents. It is a nonprofit professional organization with approximately 30,000 members. NMSA's mission is "dedicated to improving the educational experiences of young adolescents by providing vision, knowledge, and resources to all who serve them in order to develop healthy, productive, and ethical citizens." NMSA publishes three journals, two hardcopy (*Middle Ground* and *Middle School Journal*) and one online (*Research in Middle Level Education*), as well as three newsletters (Classroom Connections, Middle E-Connections, and NMSA in Action).

CONTRIBUTIONS TO EDUCATION

NMSA contributes to the field of education by advocating for the development and advancement of the middle level philosophy as a distinct entity in the educational system. In addition, NMSA influences the professional growth of teachers and others concerned with the development of young adolescents. The organization's journals are designed to focus on trends in middle level education. The journal *Middle Ground* is designed to give practitioner-based experiential knowledge to those concerned with middle level issues. *Middle School Journal* reports on research and trends in middle level education having to do with academics, discipline, social equity, and developmentally appropriate practice. The online journal, *Research in Middle Level Education*, publishes articles based on research syntheses, reviews, meta-analyses, case studies, action-research, and both qualitative and quantitative studies. The organization holds an annual conference around a specific theme such as "The Future of Education: Government, Pedagogy, and Practice." NMSA's standards have served as a model for numerous state and local agencies for middle level education. These standards are used to guide the development of curricula, assessment, and instruction in issues related to developmentally responsive middle level education. There are two groups of standards, one that examines the capacity of the institution and the other for candidate preparation. The

NMSA standards are designed to measure the capacity of the institution and to foster the candidate's development as a middle level educator. Candidates are expected to demonstrate knowledge, skills or abilities, dispositions, and their influence on adolescent students (National Middle School Association 2004). The standards are elaborated below:

NMSA Standards

1. National Middle School Association: Programmatic Standards for Initial Middle Level Teacher Preparation

- Middle Level Courses and Experiences. Institutions preparing middle level teachers have courses and field experiences that specifically and directly address middle level education.
- Qualified Middle Level Faculty. Institutions preparing middle level teachers employ faculty members who have middle level experience and expertise.

2. National Middle School Association: Performance-Based Standards for Initial Middle Level Teacher Preparation

- Young Adolescent Development. Middle level teacher candidates understand the major concepts, principles, theories, and research related to young adolescent development, and they provide opportunities that support student development and learning.
 - Middle Level Philosophy and School Organization. Middle level teacher candidates understand the major concepts, principles, theories, and research underlying the philosophical foundations of developmentally responsive middle level programs and schools, and they work successfully within these organizational components.
 - Middle Level Curriculum and Assessment. Middle level teacher candidates understand the major concepts, principles, theories, standards, and research related to middle level curriculum and assessment, and they use this knowledge in their practice.
 - Middle Level Teaching Fields. Middle level teacher candidates understand and use the central concepts, tools of inquiry, standards, and structures of content in their chosen teaching fields, and they create meaningful learning experiences that develop

all young adolescents' competence in subject matter and skills.

- **Middle Level Instruction and Assessment.** Middle level teacher candidates understand and use the major concepts, principles, theories, and research related to effective instruction and assessment, and they employ a variety of strategies for a developmentally appropriate climate to meet the varying abilities and learning styles of all young adolescents.

- **Family and Community Involvement.** Middle level teacher candidates understand the major concepts, principles, theories, and research related to working collaboratively with family and community members, and they use that knowledge to maximize the learning of all young adolescents.

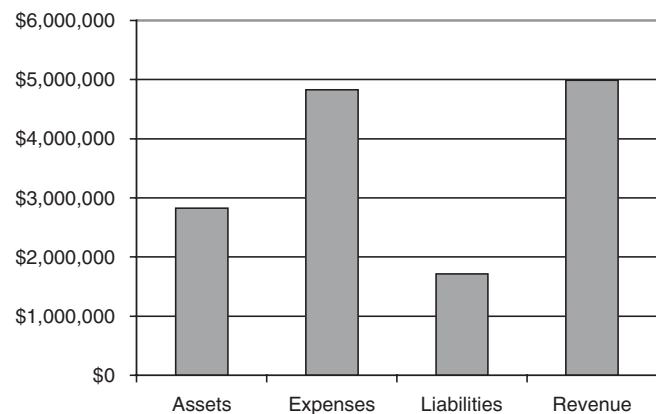
- **Middle Level Professional Roles.** Middle level teacher candidates understand the complexity of teaching young adolescents, and they engage in practices and behaviors that develop their competence as professionals.

FINANCIAL INFORMATION

The most recent information filed by NMSA indicates that the organization has over \$2.8 million in assets, \$4.8 million in expenses, \$1.7 million in liabilities, and nearly \$5 million in revenue for the 2001 calendar year (IRS 2002). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.10. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, and interest on savings and securities.

NMSA receives a large part of its revenue from membership dues. There are four different types of membership available in the National Middle School Association: individual, institutional, institutional plus, and student/parent/retiree. All membership dues depend on residence within or outside of the United States. Individual annual membership dues are \$59 for nationals and \$74 for internationals. Institutional annual membership dues are \$199 for national institutions and \$234 for international institutions. Institutional Plus annual membership dues, which include double the number of subscriptions and double the number of voting members for NMSA posts, are \$349 for national institutions and \$384

Figure 31.10 **Financial Information for the National Middle School Association, Fiscal Year Ending 2002**



Assets (holdings): \$2,824,927
Expenses (amount paid): \$4,827,220
Liabilities (amount owed): \$1,713,029
Revenue (income): \$4,989,959

Source: IRS (2002).

for international institutions. Membership dues for students and retirees are \$40 for nationals and \$55 for internationals. Additional information can be obtained online at www.nmsa.org or at the following address: NMSA, 4151 Executive Parkway, Suite 300, Westerville, OH 43081.

COUNCIL FOR EXCEPTIONAL CHILDREN

The Council for Exceptional Children (CEC) was established in 1922. CEC deals with issues related to the advocacy for the advancement of equitable educational opportunities of individuals with exceptionalities. In general, "exceptional" refers to individuals who have been identified with traits associated with disabilities or with giftedness. It is a nonprofit professional organization with approximately 50,000 members. CEC has developed a code of ethics for professionals in the field of special education. The organization's mission is "to improve educational outcomes for individuals with exceptionalities." CEC publishes two journals (*Teach-*

ing *Exceptional Children* and *Exceptional Children*) and one newsletter (CEC Today).

CONTRIBUTIONS TO EDUCATION

CEC contributes to the field of education by disseminating information on the teaching, learning, assessment, and the development of individuals with exceptionalities. In addition, CEC influences the professional growth of teachers and others concerned with the practices in special education. The organization's journals are designed to focus on trends and issues in educating individuals with exceptionalities. With a circulation of six editions per year, the journal *Teaching Exceptional Children* contains information about pedagogical practices, materials, and resources for working with students of a variety of ages and with a variety of special abilities. Further educational support is provided by the online companion to *Teaching Exceptional Children*. The journal *Exceptional Children* is a quarterly publication oriented toward research in the field of special education. The organization holds an annual international conference. CEC's standards have served as a model for numerous state and local agencies. These standards are used to guide the development of curricula, assessment, and instruction in issues related to the development of professionals in the field of special education. There are ten standards to help foster the development of future teachers of students with exceptionalities (Council for Exceptional Children 2004). They are as follows:

CEC Standards

1. Foundations. Special educators understand the field as an evolving and changing discipline based on philosophies, evidence-based principles and theories, relevant laws and policies, diverse and historical points of view, and human issues that have historically influenced and continue to influence the field of special education and the education and treatment of individuals with exceptional needs both in school and society.
2. Development and Characteristics of Learners. Special educators understand the similarities and differences in human development and the characteristics between and among individuals with and without exceptional learning needs.
3. Individual Learning Differences. Special educators understand the effects that an exceptional condition can have on an individual's learning in school and throughout life. Special educators understand that the beliefs, traditions, and values across and within cultures can affect relationships among and between students, their families, and the school community.
4. Instructional Strategies. Special educators possess a repertoire of evidence-based instructional strategies to individualize instruction for individuals with special learning needs. Special educators select, adapt, and use these instructional strategies to promote challenging learning results in general and special curricula and to appropriately modify learning environments for individuals with special learning needs.
5. Learning Environments and Social Interactions. Special educators actively create learning environments for individuals with exceptional learning needs (ELN) that foster cultural understanding, safety and emotional well being, positive social interactions, and active engagement of individuals.
6. Language. Special educators understand typical and atypical language development and the ways in which exceptional conditions can interact with an individual's experience with and use of language.
7. Instructional Planning. Individualized decisionmaking and instruction is at the center of special education practice. Special educators develop long-range individualized instructional plans anchored in both general and special curricula.
8. Assessment. Assessment is integral to the decisionmaking and teaching of special educators and special educators use multiple types of assessment information for a variety of educational decisions. Special educators use the results of assessments to help identify exceptional learn-

ing needs and to develop and implement individualized instructional programs, as well as to adjust instruction in response to ongoing learning progress.

9. Professional and Ethical Practice. Special educators are guided by the profession's ethical and professional practice standards. Special educators practice in multiple roles and complex situations across wide age and developmental ranges.

10. Collaboration. Special educators routinely and effectively collaborate with families, other educators, related service providers, and personnel from community agencies in culturally responsive ways.

FINANCIAL INFORMATION

The most recent information filed by CEC indicates that the organization has nearly \$6 million in assets, over \$13 million in expenses, \$5 million in liabilities, and \$13.2 million in revenue for the 2001 calendar year (IRS 2002). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.11. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, and interest on savings and securities.

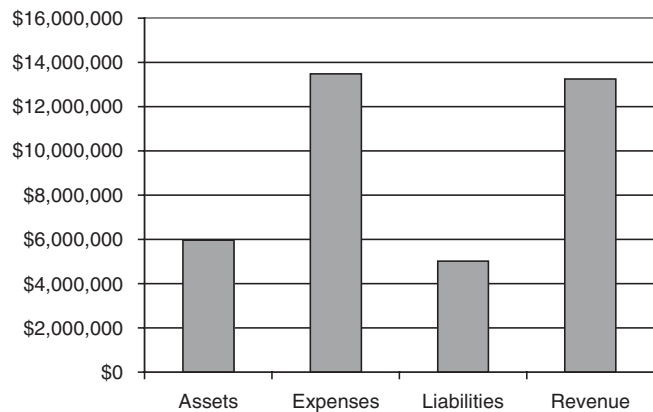
CEC receives a large part of its revenue from membership dues. Membership categories include professional, student, associate (parents or family members of exceptional students), and premiere (individual non-specialized professionals). Membership dues for the professional are dependent upon the state in which one lives. Dues for students, associates, and premieres are \$46, \$51, and \$159, respectively. Additional information can be obtained online at www.cec.sped.org or at the following address: CEC, 1110 North Glebe Road, Suite 300, Arlington, VA 22201.

Stephen J. Farenga and Daniel Ness

REFERENCES

- Council for Exceptional Children (CEC). (2004) *About the Council of Exceptional Children*. Arlington, VA: CEC. Website: www.cec.sped.org.
- Internal Revenue Service (IRS). (2002) *Form 990*. Cincinnati, OH: Internal Revenue Service.

Figure 31.11 **Financial Information for the Council for Exceptional Children, Fiscal Year Ending 2002**



Assets: \$5,963,966

Expenses: \$13,484,947

Liabilities: \$5,011,104

Revenue: \$13,239,319

Source: IRS (2002).

National Association for the Education of Young Children (NAEYC). (1994) *Initial and Advanced Programs in Early Childhood Education*. Washington, DC: NAEYC. Website: www.naeyc.org.

National Council for the Accreditation of Teacher Education (NCATE). (2000) *Program Standards for Elementary Teacher Preparation*. Washington, DC: NCATE. Website: www.ncate.org.

National Middle School Association (NMSA). (2004) *About the National Middle School Association*. Westerville, OH: NMSA. Website: www.nmsa.org.

TEACHER RELATED ORGANIZATIONS

The National Education Association (NEA) and the American Federation of Teachers (AFT) are two of the largest and most influential organizations involved in representing the teaching profession at all levels of education. By December 2000, both the NEA and AFT agreed to collaborate on joint initiatives to benefit the membership of each organization. The National Education Association–American Federation of Teachers (NEAFT) partnership is committed to establishing equality in society through education. Nevertheless, both organizations are mutually exclusive entities, which sometimes differ

on the methods and means of achieving their individual goals. The critical mass of both organizations totals an estimated 4 million individuals. In the past, each association was actively involved in improving its members' working conditions through public relations, contract negotiations, and collective bargaining. However, more recently, both NEA and AFT have increased their control over the profession to become active players in educational reform and the restructuring of schools. The NEA and the AFT are involved in the development of teaching as a profession at the initial and advanced levels of training. This common interest for each organization supports an agenda of greater independence and self-governance of the teaching profession. The literature is replete with contributions from both organizations that support recommendations for educational change at local, state, and national levels. In addition to the NEA and AFT, this entry includes a third Association, the American Educational Research Association (AERA), which provides research-related resources for both teacher practitioners and researchers.

NATIONAL EDUCATION ASSOCIATION

The National Education Association (NEA) is the largest professional employee organization devoted to the teaching profession in the United States. The organization's roots go back to 1857 when Robert Campbell, an African American educator, founded the National Teacher's Association—a forerunner of the NEA—at a convention in Philadelphia, Pennsylvania. Booker T. Washington was the keynote speaker at the 1884 NEA convention. Since then, NEA has served as an important medium for educators nationwide, and was deeply involved in a number of national movements both within (e.g., equal educational opportunity) and outside (e.g., women's suffrage, professional rights and human relations, legislation, and political action) the field of education. Moreover, NEA has made a number of inroads with other organizations in education; they are a powerful voice in the areas of professionalization and accreditation in teacher education. Recently, NEA has exceeded 2.7 million members who work in all levels of educational practice. In

addition, they have more than 14,000 affiliated organizations in all fifty states.

NEA is steadfast in its conviction that all students, regardless of race, ethnicity, or sexual orientation, deserve a quality education. As they state in their mission, NEA seeks “to fulfill the promise of a democratic society, the National Education Association shall promote the cause of quality public education and advance the profession of education; expand the rights and further the interest of educational employees; and advocate human, civil, and economic rights for all” (NEA 2004).

The NEA possesses a vast organizational structure. The NEA is composed of units such as divisions, committees, and commissions. Many of the specific subject area organizations, such as the National Council for the Social Studies, the National Science Teachers Association, and the National Council of Teachers of Mathematics, began as NEA units that were responsible for specific curriculum areas (e.g., civics/history, science, mathematics). Along with the standing committees of the Representative Assembly, NEA has established a committees on Budget, Planning and Organizational Development, Professional Negotiation, and Special Services, as well as the NEA DuShane Emergency Fund Advisory Committee.

CONTRIBUTIONS TO EDUCATION

NEA's contributions to education are numerous and can be traced back to its inception. NEA has developed basic policies that establish professional rights and responsibilities for all individuals who are involved in education. NEA has developed the Center for Human Relations, which has worked to address issues of the civil and human rights of students and teachers. In the same venue, NEA has worked on international relationships with organizations such as the United Nations Educational, Scientific, and Cultural Organization (UNESCO) to improve education in other countries throughout the world. The center supports conferences, workshops, and publications highlighting social issues that need to be addressed in an equitable manner. NEA has a long history in the struggle to improve the economic status of teachers. They have provided assistance in helping local teacher associations to negotiate salary schedules and educational policies dealing with administrative and instructional issues. NEA is active

in helping to formulate national legislative policies in education, and serves as an organization that represents the teaching profession before the United States Congress.

NEA is very adept at promoting issues related to teachers, students, and administrators at all levels of education. NEA provides a large number of journals, newsletters, magazines, and other forms of media to address a variety of issues, such as providing basic education statistics, school law, salaries, school programs, school finance, and educational equity, among other issues. Among its large number of publications, NEA's flagship journal, *NEA Today*, is published eight times per year. Having a circulation of nearly 3 million, *NEA Today* brings readers up-to-date information on the nation's most pressing educational issues. Other NEA publications include *Higher Education Advocate* (newsletter on general trends in higher education), *Thought & Action* (theoretical and practical issues in higher education), *The NEA Almanac of Higher Education* (for the latest employment figures in higher education), *Tomorrow's Teachers* (for students of education), *This Active Life* (for retired teachers and educational professionals), *Education Statistics*, as well as advertising and multimedia.

A major policy statement that reflects the concerns and values of the NEA can be found in the organization's Preamble and Code of Ethics. The Code of Ethics was first adopted in 1929, and highlights the organization's concern and responsibility for ensuring the quality of education and the character of all parties involved in the teaching profession. The NEA Code of Ethics appear below:

NEA Code of Ethics of the Education Profession

Preamble

The educator, believing in the worth and dignity of each human being, recognizes the supreme importance of the pursuit of truth, devotion to excellence, and the nurture of the democratic principles. Essential to these goals is the protection of freedom to learn and to teach and the guarantee of equal educational opportunity for all. The educator accepts the responsibility to adhere to the highest ethical standards.

The educator recognizes the magnitude of the responsibility inherent in the teaching process. The desire for the respect and confidence of one's colleagues, of students, of parents, and of the members of the community provides the incentive to attain and maintain the highest possible degree of ethical conduct. The Code of Ethics of the Education Profession indicates the aspiration of all educators and provides standards by which to judge conduct.

The remedies specified by the NEA and/or its affiliates for the violation of any provision of this Code shall be exclusive and no such provision shall be enforceable in any form other than the one specifically designated by the NEA or its affiliates.

PRINCIPLE I

Commitment to the Student

The educator strives to help each student realize his or her potential as a worthy and effective member of society. The educator therefore works to stimulate the spirit of inquiry, the acquisition of knowledge and understanding, and the thoughtful formulation of worthy goals.

In fulfillment of the obligation to the student, the educator:

1. Shall not unreasonably restrain the student from independent action in the pursuit of learning.
2. Shall not unreasonably deny the student's access to varying points of view.
3. Shall not deliberately suppress or distort subject matter relevant to the student's progress.
4. Shall make reasonable effort to protect the student from conditions harmful to learning or to health and safety.
5. Shall not intentionally expose the student to embarrassment or disparagement.
6. Shall not on the basis of race, color, creed, sex, national origin, marital status, political or religious beliefs, family, social or cultural background, or sexual orientation, unfairly—
 - a. Exclude any student from participation in any program.
 - b. Deny benefits to any student.
 - c. Grant any advantage to any student.
7. Shall not use professional relationships with students for private advantage.

8. Shall not disclose information about students obtained in the course of professional service unless disclosure serves a compelling professional purpose or is required by law.

PRINCIPLE II

Commitment to the Profession

The education profession is vested by the public with a trust and responsibility requiring the highest ideals of professional service.

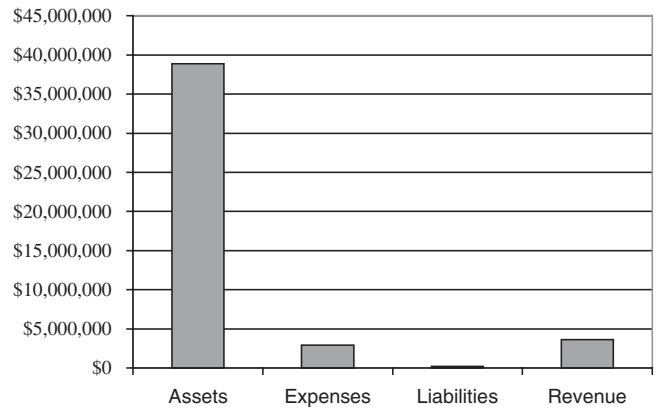
In the belief that the quality of the services of the education profession directly influences the nation and its citizens, the educator shall exert every effort to raise professional standards, to promote a climate that encourages the exercise of professional judgment, to achieve conditions that attract persons worthy of the trust to careers in education, and to assist in preventing the practice of the profession by unqualified persons.

In fulfillment of the obligation to the profession, the educator:

1. Shall not in an application for a professional position deliberately make a false statement or fail to disclose a material fact related to competency and qualifications.
2. Shall not misrepresent his/her professional qualifications.
3. Shall not assist any entry into the profession of a person known to be unqualified in respect to character, education, or other relevant attribute.
4. Shall not knowingly make a false statement concerning the qualifications of a candidate for a professional position.
5. Shall not assist a noneducator in the unauthorized practice of teaching.
6. Shall not disclose information about colleagues obtained in the course of professional service unless disclosure serves a compelling professional purpose or is required by law.
7. Shall not knowingly make false or malicious statements about a colleague.
8. Shall not accept any gratuity, gift, or favor that might impair or appear to influence professional decisions or action.

Adopted by the NEA 1975 Representative Assembly (NEA 2004).

Figure 31.12 Financial Information for the National Education Association, Fiscal Year Ending 2003



Assets (holdings): \$38,854,345
Expenses (amount paid): \$2,909,465
Liabilities (amount owed): \$226,680
Revenue (income): \$3,625,485

Source: IRS (2003).

FINANCIAL INFORMATION

The most recent information filed by NEA indicates that the organization has over \$38 million in assets, nearly \$3 million in expenses, over \$226 thousand in liabilities, and \$3.6 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.12. In general, revenues are derived from direct public support through membership dues, program service revenue that includes government fees and contracts, interest on savings and securities, and rental income.

NEA receives a large part of its revenue from membership dues, grants, and the sale of media. In order to obtain membership in the NEA, an individual will become a member at the local, state, and national levels. NEA affiliate organizations are present in over 13,000 local communities in all fifty states. There are three different categories of membership. These include active, student, and retired membership. Membership dues in any of these three categories depend upon the state in which one resides. Therefore, prospective members must contact the NEA state affiliate. Additional information can be obtained online at www.nea.org or at the following address:

NEA, 1201 16th Street NW, Washington, DC 20036–3290.

AMERICAN FEDERATION OF TEACHERS

The American Federation of Teachers (AFT) is the fastest growing affiliate of the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO). The AFT was established in 1916 in Chicago, Illinois, by teacher groups from Chicago, Gary (Indiana), New York, Scranton (Pennsylvania), and Washington, D.C. Since its association with the AFL-CIO, the AFT has been seen as a member of organized labor and clearly linked with the American labor movement. The AFT has approximately 1.3 million members who work in all levels of educational practice. The AFT has more than 3,000 local affiliates nationwide in addition to forty-three state affiliates. The AFT is committed to the field of education and all parties concerned with educational practice in society such as teachers, students, and their families. The AFT mission statement reflects this commitment: “The mission of the American Federation of Teachers, AFL-CIO, is to improve the lives of our members and their families, to give voice to their legitimate professional, economic and social aspirations, to strengthen the institutions in which we work, to improve the quality of the services we provide, to bring together all members to assist and support one another and to promote democracy, human rights and freedom in our union, in our nation and throughout the world” (from the Futures II report adopted at the AFT Convention, July 5, 2000, AFT 2004).

The AFT’s organizational structure consists of five divisions: teachers; paraprofessionals and school-related personnel (PSRP); local, state, and federal employees; higher education faculty and staff; and nurses and other healthcare professionals. Along with these divisions, The AFT works on establishing a strong partnership between schools and parents.

CONTRIBUTIONS TO EDUCATION

The AFT was an early supporter of equal rights in education. After its inception, the organization sup-

ported the women’s suffrage movement, disassociated itself from locals that refused to desegregate, was active in the civil rights movement, and supported democratic principles through its participation in voter registration drives. The AFT also aggressively supported equality in education by fighting against tuition increases in publicly funded institutions, supported increased funding of urban schools, rallied against tuition tax credits, and established criteria for safe working environments (Eaton 1975).

The AFT has worked diligently on the early issues of tenure and academic freedom. Like the NEA, the AFT has served as an important vehicle for educators nationwide, and is deeply involved in a number of national movements both within (e.g., academic freedom, fight against tuition tax credits, equitable funding for urban schools) and outside (e.g., civil rights, the organization’s steadfast support for desegregation) the field of education. The AFT was also known for its teacher militancy in supporting walk-outs and teacher strikes. These actions sometimes earned the AFT the reputation of a more radical organization than its NEA counterpart. It is also noteworthy that the AFT affiliates supported the first major strike by university professors to take place in the United States. Since that time, the AFT has been extremely active in educational reform. Like the NEA, the AFT also has made several inroads with other organizations by representing healthcare professionals and state and local employees. The organization is actively involved in fostering professional development and hosts numerous conventions for all its members in its five divisions. The AFT has become a powerful voice in the areas of professionalization and accreditation in teacher education. The AFT has been active in promoting academic achievement and excellence as evidenced by its publication “Making Standards Matter” (AFT 2001). This publication identified the progress that states were making in establishing benchmarks for what students should know and be able to do. The AFT was most concerned with having the states establish clear standards and aligning those standards with high-stakes tests.

The AFT sponsors conferences, workshops, and publications that highlight social issues involving educational innovations, healthcare, human rights, the promotion of democracy, and academic standards.

The AFT has been aggressive in the struggle to improve the economic status of teachers. They have been involved in directly supporting their affiliates by providing assistance in helping local teacher associations to negotiate salary schedules, collective bargaining, and establishing educational policies. The AFT is also actively involved in formulating national, state, and local legislative policies in education. One way that this is accomplished is through voluntary member contributions that support the Committee on Political Education (COPE). COPE supports candidates for public office and provides lobbyists to work in state capitals to urge legislation that will improve the lives of AFT members.

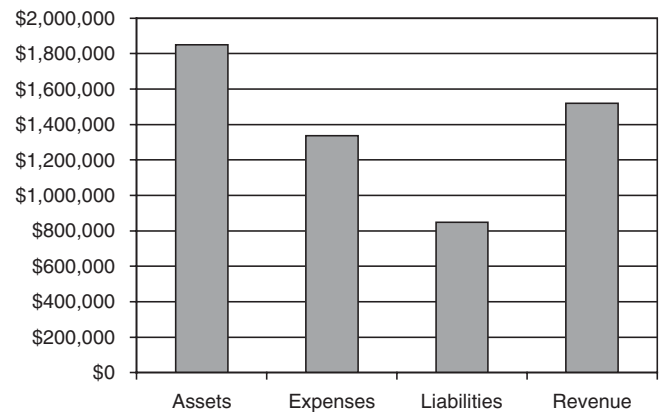
The AFT publishes a large number of journals, newsletters, magazines, and other forms of media to address a variety of issues, such as providing basic education statistics, school law, salaries, school programs, school finance, and educational equity, among others. The AFT publishes a quarterly magazine, *American Educator*. With a circulation of nearly 1.3 million, *American Educator* informs readers on current research in the field of education, best practices, assessment, career related matters, and societal issues in education. Other AFT publications include two newspapers: *The American Teacher* (a newspaper on general trends in Pre-Kindergarten through Grade 12); and *AFT On-Campus* (a newspaper having to do with issues in higher education). All three AFT publications address educational issues of interest from both national and international perspectives.

FINANCIAL INFORMATION

The most recent information filed by the AFT indicates that the organization has over \$1.8 million in assets, \$1.3 million in expenses, over \$848 thousand in liabilities, and \$1.5 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.13. In general, revenues are derived from direct public support through membership dues, interest on savings and securities, and rental income.

AFT receives a large part of its revenue from membership dues, grants, and the sale of media. In order to obtain membership with the AFT, an individual will become a member at the local level,

Figure 31.13 **Financial Information for the American Federation of Teachers, Fiscal Year Ending 2003**



Assets (holdings): \$1,849,649
Expenses (amount paid): \$1,335,832
Liabilities (amount owed): \$848,833
Revenue (income): \$1,519,688

Source: IRS (2003).

which will be affiliated with the state and national levels. As stated above, there are forty-three state affiliated organizations and over 3,000 local AFT affiliate organizations. Membership dues will vary depending on the affiliates and the local unions to which members belong. Additional information can be obtained online at www.aft.org or at the following address: AFT, 555 New Jersey Avenue NW, Washington, DC 20001.

AMERICAN EDUCATIONAL RESEARCH ASSOCIATION

The American Educational Research Association (AERA) is the largest educational organization devoted to the research in the field of education in the United States. The AERA was originally formed by eight directors of educational research of urban schools in Cincinnati, Ohio. The organization was established in 1916 in an effort to identify best teaching practices in urban school settings (Owens 1991). However, its

current charge is vastly different. As stated in its mission, the AERA “strives to improve the educational process by encouraging scholarly inquiry related to education. AERA offers a comprehensive program of scholarly publications, training, fellowships, and meetings to advance educational research, to disseminate knowledge, and to improve the capacity of the profession to enhance the public good” (AERA 2004). Past presidents of the AERA have included distinguished figures in education such as Benjamin Bloom, Maxine Greene, and Alan Schoenfeld. Recently, AERA reached a membership of 22,000 individuals, most of whom are college faculty in education and the social and behavioral sciences, administrators, educational researchers, and graduate students.

The AERA possesses a vast organizational structure. Its legislative branch, called the Association Council, includes the AERA president, the president-elect, the immediate past president, three members-at-large, the vice presidents of each of the twelve divisions of the organization (see “Contributions to Education”), the chair of the Special Interest Group (SIG) Executive Committee, and a graduate student representative. All members of the Association Council are elected officials.

CONTRIBUTIONS TO EDUCATION

The AERA has promoted issues related to research in all areas of education. The organization consists of twelve divisions, each of which emphasizes a general area in the education field. These divisions cover a broad range of areas: Division A: *Administration*; Division B: *Curriculum Studies*; Division C: *Learning and Instruction*; Division D: *Measurement and Research Methodology*; Division E: *Counseling and Human Development*; Division F: *History and Historiography*; Division G: *Social Context of Education*; Division H: *School Evaluation and Program Development*; Division I: *Education in the Professions*; Division J: *Postsecondary Education*; Division K: *Teaching and Teacher Education*; and Division L: *Educational Policy and Politics*. In addition to these divisions, AERA is comprised of 148 Special Interest Groups (SIGs), which provide opportunities for individual AERA members to meet others with similar interests of study. The AERA accommodates the SIGs at all AERA events, including the annual meeting, and allocates funds for publicity, scheduling of events,

and support staff. The AERA hosts annual meetings that are based on particular educational themes, such as “Demography and Democracy in the Era of Accountability.”

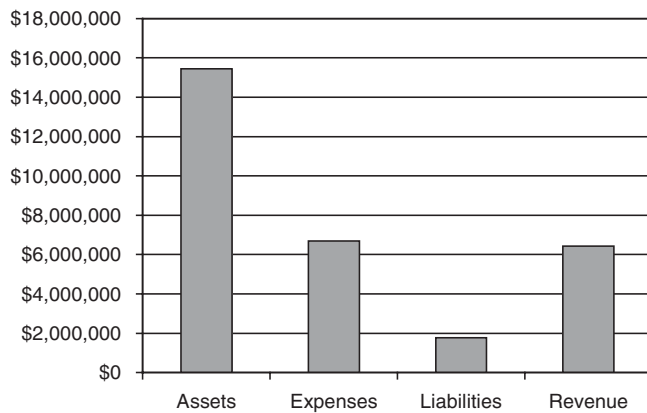
The AERA publishes six peer-reviewed journals. Moreover, each of the divisions and SIGs provides numerous newsletters, magazines, and other forms of media to address specific issues of educational research. Among its large number of publications, AERA’s flagship journal, *Educational Researcher*, is published nine times per year. The other AERA journals include the *American Educational Research Journal*, *Educational Evaluation and Policy Analysis*, the *Journal of Educational and Behavioral Statistics*, the *Review of Educational Research*, and the *Review of Research in Education*.

FINANCIAL INFORMATION

The most recent information filed by AERA indicates that the organization has over \$15.4 million in assets, nearly \$6.7 million in expenses, over \$1.7 million in liabilities, and \$6.4 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.14. In general, revenues are derived from direct public support through membership dues, program service revenue that includes government fees and contracts, interest on savings and securities, and rental income.

AERA receives most of its revenue from membership dues, grants, and the sale of media. In order to obtain membership in the AERA, an individual will become a member at the national level, at which point the individual may wish to join a special interest group (SIG). Memberships are divided into two types: voting members and nonvoting members. Voting member dues are \$110 annually and include the *Educational Researcher*, a subscription to one of the five other journals, and a newsletter from one of the twelve divisions. Voting members must demonstrate the equivalent of a master’s degree or higher in an educationally related field. Other voting members include individuals who have been dues-paying members for twenty consecutive years. These individuals, referred to as “emeritus” members, pay nothing. Nonvoting members include associates, who do not demonstrate the equivalent of a master’s degree in an educa-

Figure 31.14 **Financial Information for the American Educational Research Association, Fiscal Year Ending 2003**



Assets (holdings): \$15,444,130
Expenses (amount paid): \$6,696,560
Liabilities (amount owed): \$1,766,299
Revenue (income): \$6,432,144

Source: IRS (2003).

tionally related field, or who have professional status in a non-educationally related field. Associate's dues are also \$110 annually. Other non-voting AERA members include graduate students, who pay annual dues of \$25 (not to exceed five years), and foreign members, who pay annual dues of \$90. Additional information can be obtained online at www.aera.net or at the following address: AERA, 1230 17th Street NW, Washington, DC 20036.

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EDUCATIONAL TESTING ORGANIZATIONS

Educational testing organizations include associations that are in the business of test creation, development, and assessment. This entry includes two of the largest organizations in the field. They are the College Entrance Examination Board (the College Board) and the Educational Testing Service (ETS). These organizations vary in size, contributions to the field of test development, and financial status. Both the College Board and ETS are perhaps best known for the development, distribution, administration, and assessment of well-known high-stakes tests, for example, the Scholastic Achievement (formerly "Aptitude") Test (SAT) and the Graduate Record Examination (GRE), which are given throughout the world, as well as numerous subject specific tests.

COLLEGE ENTRANCE EXAMINATION BOARD

The College Entrance Examination Board (College Board) is a national nonprofit membership association founded in 1900. The membership includes more than 4,700 schools, colleges, universities, and other educational organizations. It also serves more than 3.5 million students, over 23,000 high schools, and 3,500 colleges and universities. The College Board functions as a placement organization for prospective freshman who wish to attend college. The organization owns a number of selective educational programs designed to measure the achievement of students. The College Board's mission is "to connect students to college success and opportunity." The College Board suggests that its placement tests provide a reciprocal relationship between the col-

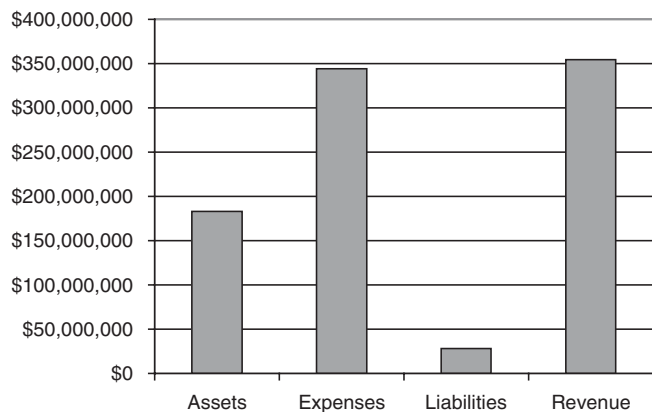
lege applicant and the colleges to which the applicant applies. It does so in the following ways: “as a way to compare yourself with students already attending the colleges you’re considering; another way to show what you have achieved throughout your academic life; a way to compare you with others applying for admission and with their currently enrolled students; a fair, standardized way for admission staff to make important decisions about the likelihood of your being a successful, contributing member of their freshman class” (College Board 2001, 8).

CONTRIBUTIONS TO EDUCATION

The early contributions to education from the College Board were done in collaboration with the Educational Testing Service (ETS). ETS developed the test questions and managed the scoring for the College Board SAT examinations. Recently, the College Board contracted with the publishing firm Pearson NCS to grade the new writing sample that was part of the new SAT in the spring of 2005. In addition to its widely known reputation in administering college entrance examinations, the College Board sponsors a variety of workshops for curricular development, professional programs for teacher development, guidance counselors, and financial aid officers.

The College Board is best known for creating and designing pre-college and college entrance examinations. The most well-known tests that the College Board has created are the Advanced Placement (AP) Program®, the Scholastic Achievement Test (SAT)®, and the Preliminary Scholastic Assessment Test/National Merit Scholarship Qualifying Test (PSAT/NMSQT)®. The College Board publications include information on a wide variety of college related information from financial aid to guidance and admission requirements of select colleges. Other publications are designed to prepare applicants with sample questions that would be found in their selected examination. Students may also find a great deal of information on its website. A selection of College Board publications include *Campus Visits and College Interviews*, the *College Handbook*, the *College Board Guide to High Schools*, *College Cost and Financial Aid*, the *International Student Handbook*, *10 Real SATs*, *SAT II: Subject Tests*, and *Index of Majors and Graduate Degrees*.

Figure 31.15 **Financial Information for the College Entrance Examination Board, Fiscal Year Ending 2003**



Assets (holdings): \$182,933,721

Expenses (amount paid): \$344,033,000

Liabilities (amount owed): \$28,423,752

Revenue (income): \$354,434,560

Source: IRS (2003).

FINANCIAL INFORMATION

The most recent information filed by the College Board indicates that the organization has nearly \$183 million in assets, over \$344 million in expenses, \$28.4 million in liabilities, and \$354 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.15. In general, revenues are derived from test applicant registration fees, test development fees, consulting fees, and test processing fees.

Additional information can be obtained online at www.collegeboard.com or at the following address: College Board, 45 Columbus Avenue, New York, NY 10023.

EDUCATIONAL TESTING SERVICE

The Educational Testing Service (ETS) is the largest producer and administrator of standardized tests in the world. During the 1940s, the well-known Harvard University president, James Bryant Conant, was responsible for creating the rationale for an autonomous and research based testing organization like ETS. Founded in 1947, ETS was formed by three

organizations—American Council on Education, the Carnegie Foundation for the Advancement of Teaching, and the College Entrance Examination Board—that identified what they believed to be their most effective testing tools and equipment. The primary architect of the present-day ETS was Henry Chauncey, who had originally designed tests for the purpose of easing the transition of soldiers into civilian roles. These three organizations also contributed a good deal of their assets and a number of employees to create ETS.

CONTRIBUTIONS TO EDUCATION

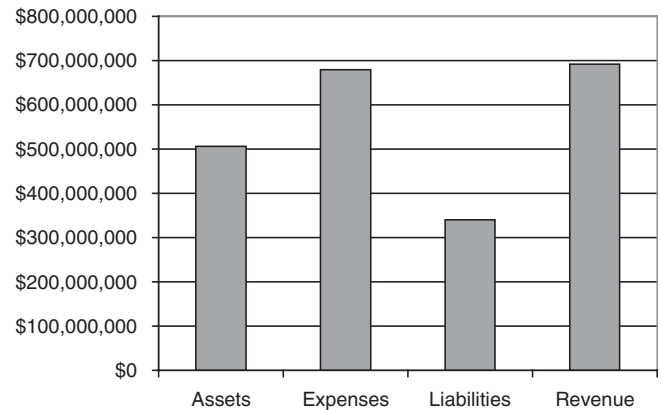
ETS, as well as other educational organizations, often associate educational quality with test-taking performance. This observation is clear in the organization’s mission statement and vision statement. ETS’s mission is to “advance quality and equity in learning worldwide” and their vision is to expand their mission to a worldwide level. In fact, in their vision statement, ETS wishes to become a “global leader” in the areas of testing and research in education and related issues.

ETS has developed a wide variety of assessments used by states for teacher certification and licensure. The organization administers 144 different tests in this area alone (ETS 1999; National Research Council 2001). ETS offers paper and pencil and computer-based versions of its basic skills tests. They provide 126 different subject-matter tests covering over fifty different subject areas.

ETS has a large stake in the testing of teachers. Its examinations are widely used at the initial and professional levels of teacher licensing. The initial level tests are designed to identify candidates with the appropriate knowledge and skills that are required for effective performance prior to entering the profession. As part of the teaching and licensing of beginning teachers, basic skills, general knowledge, subject matter knowledge, pedagogical knowledge, and subject specific pedagogical knowledge have been developed by ETS, and may be required on an individual basis, depending on the state in which one resides.

These professional assessments are designed to measure the abilities of initial and professional levels of knowledge and skills of teachers. The Praxis series contains three components: Praxis I includes

Figure 31.16 **Financial Information for the Educational Testing Service, Fiscal Year Ending 2003**



Assets (holdings): \$506,134,835
Expenses (amount paid): \$678,910,634
Liabilities (amount owed): \$340,048,993
Revenue (income): \$691,882,210

Source: IRS (2003).

Academic Skills Assessments; Praxis II includes Subject Assessments in a specialty area, Professional Knowledge, and Core Battery tests, the Principles of Learning and Teaching (PPLT), and the Multiple Subject Assessment for Teachers (MSAT); Praxis III includes Classroom Performance Assessment.

FINANCIAL INFORMATION

The most recent information filed by ETS indicates that the organization has over \$506 million in assets, \$678 million in expenses, \$340 million in liabilities, and nearly \$700 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in figure 31.16. In general, revenues are derived from test applicant registration fees, test development fees, consulting fees, and test processing fees.

Additional information can be obtained online at www.ets.org or at the following address: Educational Testing Service, Rosedale Road, Princeton, NJ 08541.

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NATIONAL CERTIFICATION AND ACCREDITATION ORGANIZATIONS

The role of accreditation in teacher education in the early days (c. 1940s–1950s) did not have as strong an impact on the training of teachers and educational professionals as it does today. Prior to 1954, the year that the National Council for Accreditation of Teacher Education (NCATE) was established, institutions of higher education that solely trained teachers (also known as normal schools) were, for the most part, accredited by legislative agencies that dealt primarily with the training of teachers. By the end of the Second World War, legislative organizations agreed to include any liberal arts and science college or university with programs or schools of education. NCATE, formed by five organizations associated with college and university teaching, quickly rose to be the eminent national organization to accredit teacher training programs in institutions of higher education.

By the early 1960s, NCATE maintained a stronghold in this position, and remained the leading accreditor for nearly forty years. By the late 1990s, other organizations had formed—the most prominent of them being the Teacher Education Accreditation Council (TEAC). In addition to the accrediting agencies, other related organizations, particularly associated with the development of standards in education, were formed as a result of the highly controversial publication of *A Nation at Risk* (NCEE 1983). In addition to NCATE and TEAC,

we discuss the origin and development of the National Board for Professional Teaching Standards (NBPTS).

NATIONAL COUNCIL FOR ACCREDITATION OF TEACHER EDUCATION

The National Council for Accreditation of Teacher Education (NCATE) was established in 1954 as a voluntary nonprofit organization in an effort to accredit college and university programs of teacher education in the United States. In its inception, NCATE was recognized as the sole accrediting agency for teacher education institutions. At present, despite its role as the largest accreditor of teacher education preparation, NCATE is one of several accrediting agencies in the United States.

CONTRIBUTIONS TO EDUCATION

Established on November 14, 1952, the founders of NCATE were affiliated with five organizations: the American Association of Colleges for Teacher Education, the Council of Chief State School Officers, the National Association of State Directors of Teacher Education and Certification, the National Education Association, and the National School Boards Association. By 1957, the NCATE structure consisted of a council of nineteen representatives from these organizations (seven from AACTE, one from CCSSO, one from NASDTEC, six from the NEA, and one from NSBA) including three who were appointed by the National Commission on Accrediting. When NCATE assumed its responsibilities of accrediting teacher education institutions on July 1, 1954, it had accepted 275 out of the 284 institutions that were already members of AACTE. By 1961, almost one decade after its inception, NCATE accredited 150 institutions of which 82 were previously denied accreditation and 68 that were granted accreditation. After six years, NCATE accredited 343 institutions in total.

Prior to 2000, NCATE attempted to overhaul its accreditation process. The publication of *A Nation at Risk* (1983) resulted in the formation of standards by nearly all educational organizations, particularly those having to do with subject matter knowledge. NCATE has developed six standards to evaluate the

effectiveness of teacher preparation institutions. They are as follows:

NCATE TEACHER PREPARATION STANDARDS

1. **Candidate Knowledge, Skills, and Dispositions:** This standard refers to the qualities, attributes, and characteristics of the teacher. This includes all matters related to the teacher candidates' professional and pedagogical knowledge of human development and the ability to facilitate learning for all students.
2. **Assessment System and Unit Evaluation:** This standard refers to the teacher candidates' ability to accurately assess and analyze student learning. From the data gathered, the teacher candidate is expected to make appropriate modifications to instruction, further assessment, and evaluation.
3. **Field Experiences and Clinical Practice:** This standard refers to the teacher candidates' experience in the field with students. It evaluates teacher candidates on their ability to demonstrate knowledge, skills, and dispositions that are necessary to help all students learn.
4. **Diversity:** This standard refers to the unit's (educational program's) capacity to provide teacher candidates with the opportunities to work with diverse school faculty, other diverse candidates, and diverse students from preschool to grade 12 schools.
5. **Faculty Qualifications:** This standard refers to the unit's capacity to provide qualified faculty who can model best professional practices in scholarship, service to the community, and teaching.
6. **Unit Governance and Resources:** This standard refers to the unit's autonomy in budget, personnel, and leadership. In addition, the unit must provide the appropriate resources and facilities to prepare teacher candidates.

NCATE has established partnerships with forty-eight states, the District of Columbia, and Puerto

Rico. The only states that have not established partnerships with the organization are New Hampshire and Vermont.

In the June 2003 "A List of Professionally Accredited Schools, Colleges, and Departments of Education," one of the numerous pages on its website, NCATE lists a total of 552 colleges and universities in the United States and Puerto Rico (NCATE 2003). Most recently, NCATE is seeking to certify international institutions of higher education for their teacher education programs. In 2004, the same list showed an increase of 26 higher education institutions, for a total of 578 institutions accredited by NCATE. This is an approximately 4.7 percent increase in the twelve-month period from June 2003 to May 2004. Of these 26 newly accredited institutions, 7 were from New York, 3 were from Illinois, 2 from both Maryland and Oklahoma, and 1 from Alabama, California, Connecticut, Georgia, Kansas, Louisiana, Missouri, Ohio, South Carolina, Texas, Utah, and Virginia.

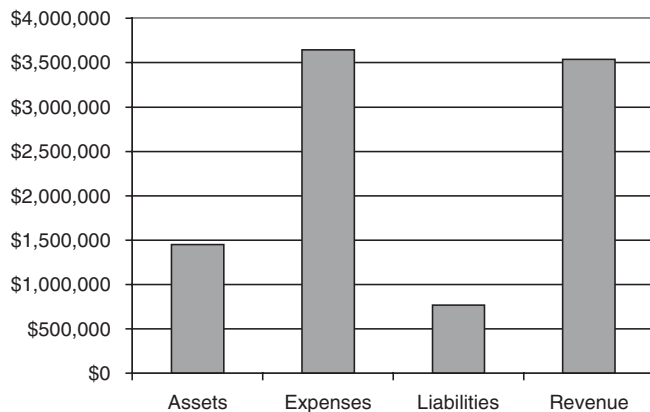
FINANCIAL INFORMATION

The most recent information filed by NCATE indicates that the organization has over \$1.4 million in assets, \$3.6 million in expenses, \$760 thousand in liabilities, and over \$3.5 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.17. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, interest on savings and securities, and rental income.

In addition to the information supplied by the IRS 990 form, the following are figures that demonstrate how NCATE obtains its financial support (Vergari and Hess 2002). NCATE uses a sliding scale with regard to each institution's annual dues. Depending on the financial status, an accredited department in a college or university pays an annual accreditation fee of somewhere between \$1,615 and \$3,095. Institutions that are not AACTE members must pay an additional fee of \$745 to \$1,245 to be a sustaining member of NCATE. NCATE also charges from \$3,000 to \$8,000 for each five-year visit required for each accredited department to sustain accreditation.

NCATE also charges annual dues from its thirty-

Figure 31.17 **Financial Information for the National Council for the Accreditation of Teacher Education, Fiscal Year Ending 2003**



Assets (holdings): \$1,451,126

Expenses (amount paid): \$3,646,596

Liabilities (amount owed): \$769,085

Revenue (income): \$3,536,676

Source: IRS (2003).

three member organizations, also known as specialized professional associations (SPAs). Annual NCATE dues can range from \$12,000 for smaller organizations to as much as \$250,000 for larger organizations like the National Education Association (NEA). According to Vergari and Hess (2002), NCATE has made an agreement with its member organizations to allow them to play a role in the development and implementation of the NCATE standards.

Additional information can be obtained online at www.ncate.org or at the following address: NCATE, 2010 Massachusetts Avenue NW, Suite 500, Washington, DC 20036-1023.

TEACHER EDUCATION ACCREDITATION COUNCIL

The Teacher Education Accreditation Council (TEAC) is a nonprofit organization that was established in 1997 at the University of Delaware. The organization, however, has two locations—one in Newark, Delaware, and the other in Washington,

DC. TEAC was developed in response to the National Council for the Accreditation of Teacher Education (NCATE) to provide schools of education with an alternative means for obtaining national accreditation. The major philosophical difference between the two accreditation agencies, at the inception of TEAC, was the accreditation of the individual programs (TEAC) as opposed to the accreditation of the unit that houses the educational programs (NCATE).

CONTRIBUTIONS TO EDUCATION

TEAC distinguishes itself from NCATE in a number of ways. First, unlike NCATE, TEAC accredits individual programs and NCATE accredits the units that house the programs and the capacity of each unit to support the program. TEAC has the option of using either national standards or institutionally developed standards. For TEAC accreditation, the individual institution of higher education itself has the autonomy to identify the necessary components and features of what constitutes a satisfactory program. The administrators of TEAC developed three quality principles and a set of standards to assist colleges and universities with educational programs in upholding these principles. The three quality principles are the following:

TEAC Principles and Standards

1. Evidence of student learning: The core of TEAC accreditation is the quality of the evidence the program faculty members provide in support of their claims about their students' learning and understanding of the teacher education curriculum.
2. Valid Assessment of Student Learning: TEAC expects program faculty to provide (1) a rationale justifying its claims that the assessment techniques it uses are reasonable and credible, and (2) evidence documenting the reliability and validity of the assessments.
3. Institutional Learning: TEAC expects that a faculty's decisions about its programs are based on evidence, and that the program has a quality control system that (1) yields reliable evidence

about the program's practices and results, and (2) influences policies and decisionmaking.

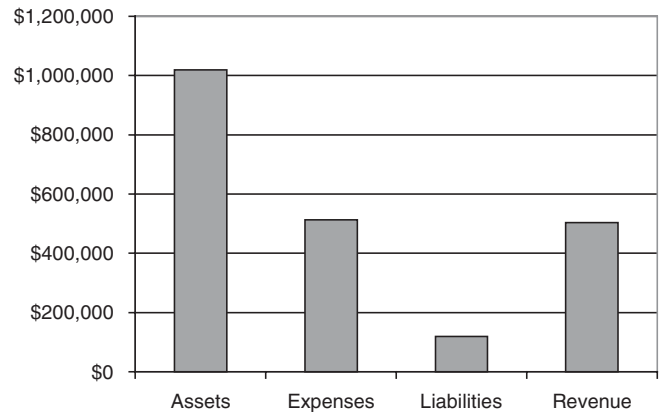
The TEAC Standards provide benchmarks that help programs demonstrate that they have met the quality principles. According to TEAC, a "quality program" is "one that has credible evidence that it satisfies the three quality principles" (TEAC 2002). However, TEAC also requires the program faculty to provide evidence that it has the capacity—curriculum, faculty, resources, facilities, publications, student support services, and policies—to support student learning and program quality. This evidence should be independent of student learning and based on some traditional input features of capacity.

The program faculty can make the case that it has a sufficient capacity for quality in any way that meets scholarly standards of evidence; however, TEAC requires that the faculty cover the following basic points in making its case.

1. **Quality Control:** The faculty must show that it monitors systematically the quality of the program and that the faculty is disposed to act to continuously improve program quality.
2. **Evidence of Commitment:** The faculty must also provide evidence that the institution is committed to the program. Commitment is most conveniently seen in the evidence of parity of the program within the institution.
3. **Unique Capacity:** The faculty must also address whatever unique capacity is needed for program quality in professional education. Teacher education programs, for example, have unique features, such as student teaching and clinical courses. The institution and program must provide resources, administrative direction, and facilities for these unique and distinctive features. The program faculty must make a case that overall it has the capacity to offer a quality program.

A program needs to demonstrate that it has the capacity to produce qualified candidates. The standards that measure capacity are included in the following components: Curriculum; Faculty; Facilities, Equip-

Figure 31.18 **Financial Information for the Teacher Education Accreditation Council, Fiscal Year Ending 2003**



Assets (holdings): \$1,018,720
Expenses (amount paid): \$513,261
Liabilities (amount owed): \$120,080
Revenue (income): \$503,346

Source: IRS (2003).

ment, and Supplies; Fiscal and Administrative Services; Student Support Services; Recruiting and Admissions Practices; Academic Calendars, Catalogs, Publications; and Student Feedback.

FINANCIAL INFORMATION

The most recent information filed by TEAC indicates that the organization has over \$1 million in assets, \$513 thousand in expenses, \$120 thousand in liabilities, and over \$500 thousand in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in figure 31.18. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, interest on savings and securities, and rental income.

TEAC receives a large part of its revenue from membership dues and from the periodic review process of institutions of higher education. Individual membership dues are \$65 annually. Institutional membership dues are \$100 annually. Additional information can be obtained online at www.teac.org

or at the following address: TEAC, One Dupont Circle, Suite 320, Washington, DC 20036-0110.

NATIONAL BOARD FOR PROFESSIONAL TEACHING STANDARDS

The National Board for Professional Teaching Standards (NBPTS) is a nonprofit organization that was established in 1987. The organization was established by both the Carnegie Forum on Education and the Economy's Task Force on Teaching as a Profession as an answer to the government's controversial diatribe *A Nation at Risk* (NCEE 1983), which derided public education in the United States. As stated in the organization's mission, NBPTS seeks "to advance the quality of teaching and learning by: (1) maintaining high and rigorous standards for what accomplished teachers should know and be able to do; (2) providing a national voluntary system certifying teachers who meet these standards; and (3) advocating related education reforms to integrate National Board Certification in American education and to capitalize on the expertise of National Board Certified Teachers" (NBPTS 2004). Professionals who are successful in meeting these demands are nationally certified and believed to represent and reflect the best practices in the field of education.

CONTRIBUTIONS TO EDUCATION

NBPTS's major contribution to education is that it is an organization that has been developed by teachers and for teachers in order to raise the status of teaching to a recognized profession analogous to the status of physicians, attorneys, and certified public accountants. The organization is the first to certify nationally recognized teachers. As stated previously, NBPTS's goal is to identify and recognize teachers who demonstrate knowledge, skills, and dispositions that reflect the five propositions listed below.

NBPTS TEACHER'S PROPOSITION STANDARDS

1. Teachers are Committed to Students and Their Learning.

- Teachers Recognize Individual Differences in Their Students and Adjust Their Practice Accordingly: To respond effectively to individual differences, teachers must know many things about the particular students they teach.
- Teachers Have an Understanding of How Students Develop and Learn: In addition to particular knowledge of their students, teachers use their understanding of individual and social learning theory, and of child and adolescent development theory, to form their decisions about how to teach.
- Teachers Treat Students Equitably: Accomplished teachers are vigilant in ensuring that all pupils receive their fair share of attention, and that biases based on real or perceived ability differences, handicaps or disabilities, social or cultural background, language, race, religion, or gender do not distort relationships between themselves and their students.
- Teachers' Mission Extends Beyond Developing the Cognitive Capacity of Their Students: Teachers are concerned with their students' self-concept, with their motivation, with the effects of learning on peer relationships, and with the development of character, aspiration, and civic virtues.

2. Teachers Know the Subjects They Teach and How to Teach Those Subjects to Students.

- Teachers Appreciate How Knowledge in Their Subjects is Created, Organized and Linked to Other Disciplines: Teachers in command of their subject understand its substance—factual information as well as its central organizing concepts—and the ways in which new knowledge is created, including the forms of creative investigation that characterize the work of scholars and artists.
- Teachers Command Specialized Knowledge of How to Convey a Subject to Students: Accomplished teachers possess "pedagogical content knowledge." Such understanding is the joint product of wisdom about teaching, learning, students, and content.
- Teachers Generate Multiple Paths to Knowledge:

Knowledgeable teachers are aware there is value in both structured and inductive learning.

3. Teachers are Responsible for Managing and Monitoring Student Learning.

- **Teachers Call on Multiple Methods to Meet Their Goals:** Accomplished teachers know and can employ a variety of generic instructional skills—how to conduct Socratic dialogues, how to lecture, how to oversee small cooperative learning groups.
- **Teachers Orchestrate Learning in Group Settings:** Teachers know how to manage groups of students. They are responsible for setting forth the social norms by which students and teachers act and interact, helping students learn to adopt appropriate roles and responsibilities for their own learning and that of their peers.
- **Teachers Place a Premium on Student Engagement:** The National Board Certified teacher understands the ways in which students can be motivated and has strategies to monitor student engagement.
- **Teachers Regularly Assess Student Progress:** Proficient teachers . . . can judge the relative success of the activities they design. They can track what students are learning (or not learning), as well as what they, as teachers, are learning.
- **Teachers Are Mindful of Their Principal Objectives:** Teachers know about planning instruction—identifying and elaborating educational objectives, developing activities to help them meet their goals, and drawing upon resources that will serve their purposes.

4. Teachers Think Systematically About Their Practice and Learn from Experience.

- **Teachers Are Continually Making Difficult Choices That Test Their Judgment:** The demands of teaching often present stiff challenges that do not lend themselves to simple solutions.
- **Teachers Seek the Advice of Others and Draw on Education Research and Scholarship to Improve Their Practice:** Aware that experience is not always a good teacher, proficient teach-

ers search out other opportunities that will serve to cultivate their own learning.

5. Teachers are Members of Learning Communities.

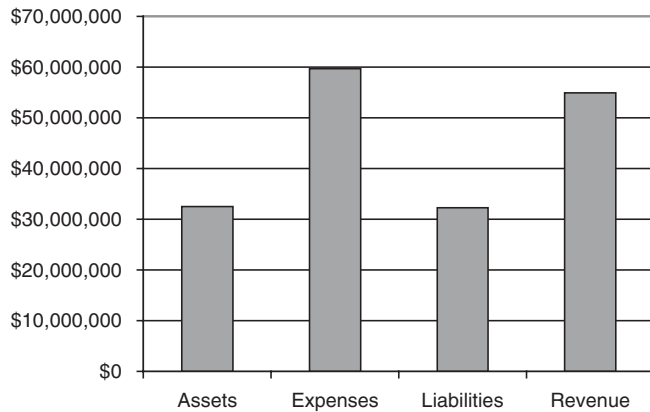
- **Teachers Contribute to School Effectiveness by Collaborating with Other Professionals:** The National Board advocates a more proactive and creative role for teachers: engaging them in the analysis and construction of curriculum, in the coordination of instruction, in the professional development of staff and in many other school-site policy decisions fundamental to the creation of highly productive learning communities.
- **Teachers Work Collaboratively with Parents:** Teachers share with parents the education of the young. They communicate regularly with parents and guardians, listening to their concerns and respecting their perspective, enlisting their support in fostering learning and good habits, informing them of their child's accomplishments and successes, and educating them about school programs.
- **Teachers Take Advantage of Community Resources:** Professional teachers cultivate knowledge of their school's community as a powerful resource for learning.

FINANCIAL INFORMATION

The most recent information filed by NBPTS indicates that the organization has over \$32 million in assets, \$59.6 million in expenses, \$32.3 million in liabilities, and over \$54.8 million in revenue for the 2002 calendar year (IRS 2003). The actual amounts for assets, expenses, liabilities, and revenue are shown in Figure 31.19. In general, revenues are derived from direct public support through membership dues and assessments, program service revenue including government fees and contracts, interest on savings and securities, and rental income.

NBPTS is governed by a board of directors, most of whom are practitioners in the education field. A segment of the organization's income is derived from candidates' applications for national certification, grants from private and government organizations, and sponsorship from other professional organizations.

Figure 31.19 **Financial Information for the National Board for Professional Teaching Standards, Fiscal Year Ending 2002**



Assets (holdings): \$32,485,380

Expenses (amount paid): \$59,642,344

Liabilities (amount owed): \$32,300,367

Revenue (income): \$54,874,883

Source: IRS (2003).

Additional information can be obtained online at www.nbpts.org or at the following address: NBPTS, 1525 Wilson Boulevard, Arlington, VA 22209.

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