

Practically Speaking

Language, Literacy,
& Academic Development
for Students with AAC Needs

AAC
Series

Gloria Soto & Carole Zangari



Practically Speaking

Language, Literacy, and Academic
Development for Students with AAC Needs

edited by

Gloria Soto, Ph.D.

San Francisco State University
San Francisco

and

Carole Zangari, Ph.D., CCC-SLP

Nova Southeastern University
Ft. Lauderdale, Florida



Baltimore • London • Sydney



Paul H. Brookes Publishing Co.
Post Office Box 10624
Baltimore, Maryland 21285-0624
USA
www.brookespublishing.com

Copyright © 2009 by Paul H. Brookes Publishing Co., Inc.
All rights reserved.

“Paul H. Brookes Publishing Co.” is a registered trademark of
Paul H. Brookes Publishing Co., Inc.

Typeset by Spearhead Global, Inc., Bear, Delaware.
Manufactured in the United States of America by
Sheridan Books, Inc., Chelsea, Michigan.

The individuals described in this book are composites or real people whose situations are masked and are based on the authors’ experiences. In most instances, names and identifying details have been changed to protect confidentiality. Real names and identifying details are used with permission.

Library of Congress Cataloging-in-Publication Data

Practically speaking: language: literacy, and academic development for students with AAC needs/edited by
Gloria Soto and Carole Zangari.—1st ed.
p. cm.—(Augmentative and alternative communication series)
Includes bibliographical references and index.
ISBN-13: 978-1-55766-951-3 (pbk.)
ISBN-10: 1-55766-951-1 (pbk.)
1. Children with disabilities—Education—Textbooks. 2. Language arts—Remedial teaching—Textbooks.
3. Communicative disorders in children—Treatment—Textbooks. I. Soto, Gloria. II. Zangari, Carole.
III. Title. IV. Series.

LC4028.P73 2009
371.9’0446—dc22
2008049533

British Library Cataloguing in Publication data are available from the British Library.

2013	2012	2011	2010	2009						
10	9	8	7	6	5	4	3	2	1	

Contents

Series Preface vii
Series Editors and Editorial Advisory Board viii
Volume Preface ix
About the Editors xi
Contributors xiii
Acknowledgments xv

I Assessment

1 Educational Assessment Issues
 Lynn Ahlgrim-Delzell 3
2 Assessment of Early Communication Skills
 June E. Downing 27
3 Language Assessment for Students Who Use AAC
 Lisa A. Proctor and Carole Zangari 47
4 Diagnostic Reading Assessment for Students with AAC Needs
 David A. Koppenhaver, Beth E. Foley, and Amy R. Williams 71
5 Writing Assessment for Students with AAC Needs
 Beth E. Foley, David A. Koppenhaver, and Amy R. Williams 93

II Instruction and Intervention

6 Academic Adaptations for Students with AAC Needs
 Gloria Soto 131
7 Addressing the Communication Demands of the Classroom
 for Beginning Communicators and Early Language Users
 Jennifer Kent-Walsh and Cathy Binger 143
8 Supporting More Advanced Linguistic Communicators in the Classroom
 Carole Zangari and Gail Van Tatenhove 173
9 Addressing the Literacy Demands of the Curriculum for Beginning
 Readers and Writers
 Karen A. Erickson and Sally A. Clendon 195
10 Addressing the Literacy Demands of the Curriculum for Conventional
 and More Advanced Readers and Writers Who Require AAC
 Janice C. Light and David McNaughton 217
11 Strategies to Support the Development of Positive Social Relationships
 and Friendships for Students Who Use AAC
 Pam Hunt, Kathy Doering, Julie Maier, and Emily Mintz 247
12 Integrating Assistive Technology with Augmentative Communication
 Yvonne Gillete 265

III Supports

13 Supporting Collaborative Teams and Families in AAC
Nancy B. Robinson and Patti L. Solomon-Rice 289

14 Consideration of Cognitive, Attentional, and Motivational Demands
in the Construction and Use of Aided AAC Systems
Krista M. Wilkinson and Shannon C. Hennig 313

Index. 335

Series Preface

The purpose of the Augmentative and Alternative Communication Series is to address advances in the field as they relate to issues experienced across the life span. Each volume is research-based and practical, providing up-to-date and ground-breaking information on recent social, medical, and technical developments. Each chapter is designed to be a detailed account of a specific issue. To help ensure a diverse examination of augmentative and alternative communication (AAC) issues, an editorial advisory board assists in selecting topics, volume editors, and authors. Prominent scholars, representing a range of perspectives, serve on the editorial board so that the most poignant advances in the study of AAC are sure to be explored.

In the broadest sense, the concept of AAC is quite old. Gestural communication and other types of body language have been widely addressed in the literature about communication for hundreds of years. Only recently, though, has the field of AAC emerged as an academic discipline that incorporates graphic, auditory, and gestural modes of communicating. The series concentrates on achieving specific goals. Each volume details the empirical methods used to design AAC systems for both descriptive groups and for individuals. By tracking the advances in methods, current research, practice, and theory, we will also develop a broad and evolutionary definition of this new discipline.

Many reasons for establishing this series exist, but foremost has been the number and diversity of the people who are affected by AAC issues. AAC consumers and their families, speech-language pathologists, occupational therapists, physical therapists, early childhood educators, general and special educators, school psychologists, neurologists, and professionals in rehabilitative medicine and engineering all benefit from research and advancements in the field. Likewise AAC needs are not delineated by specific age parameters; people of all ages who have developmental and acquired disabilities rely on AAC. Appropriate interventions for individuals across a wide range of disabilities and levels of severity must be considered.

Fundamentally, the field of AAC is problem driven. We, the members of the editorial advisory board, and all professionals in the field are dedicated to solving problems in order to improve the lives of people with disabilities. The inability to communicate effectively is devastating. As we chronicle the advances in the field of AAC, we hope to systematically dismantle the barriers that prevent effective communication for all individuals.

Series Editors

David R. Beukelman, Ph.D.

Professor
Department of Special Education and
Communication Disorders
University of Nebraska
202F Barkley Memorial Center
Post Office Box 830732
Lincoln, NE 68583

Joe Reichle, Ph.D.

Professor
Departments of Speech-Language-Hearing
Sciences and Educational Psychology
University of Minnesota
115 Shevlin Hall
164 Pillsbury Drive S.E.
Minneapolis, MN 55455

Editorial Advisory Board

Steve Calculator, Ph.D.

Professor and Chairperson
Department of Communication Disorders
University of New Hampshire
Hewitt Hall
4 Library Way
Durham, NH 03824

Janice C. Light, Ph.D.

Distinguished Professor
Department of Communication Sciences and
Disorders
The Pennsylvania State University
308 Ford Building
University Park, PA 16802

Beth Mineo Mollica, Ph.D.

Scientist
Center for Applied Science and Engineering
Alfred I. DuPont Hospital for Children
1600 Rockland Road
Wilmington, DE 19803

Pat Mirenda, Ph.D.

Professor
Department of Educational and Counseling
Psychology and Special Education
The University of British Columbia
2125 Main Mall
Vancouver, BC V6T 1Z4
Canada

MaryAnn Ronski, Ph.D.

Regents' Professor of Communication,
Psychology, Educational Psychology, and
Special Education
Associate Dean of Social and Behavioral
Sciences
Georgia State University
38 Peachtree Center Avenue
Atlanta, GA 30303

Kathryn M. Yorkston, Ph.D.

Professor and Head of the Division of Speech
Pathology
Department of Rehabilitation Medicine
University of Washington
Box 356490
Seattle, WA 98185

Volume Preface

The purpose of this book is to provide information to professionals and preprofessional students who serve children with significant communication challenges in school settings. It is the result of many years of combined teaching, research, and delivery of augmentative and alternative communication (AAC) services to students with a variety of abilities, characteristics, and interests. The topics covered in the book reflect our own need for a resource book that includes the necessary information for current and future members of teams serving students with AAC needs in school settings. In some ways, it grew out of frustration at the many obstacles that students with AAC needs and their educational teams face on a daily basis. We believe that a great many of these barriers can be minimized with clear, accurate information about how to facilitate language, academic, and social growth in children who require AAC.

The book focuses on achievement in core language and literacy competencies required for academic and social contexts. It addresses the challenges faced by practitioners, targeting both AAC competence and curricular content. It includes guidelines, strategies, and tools necessary to address student needs, demands of the curriculum, the nature of social contexts, and required technology supports within a complex school environment. Readers will be able to do the following:

1. Use the general education curriculum as a context for goal setting
2. Understand and address the language and communication demands of the curriculum
3. Develop and implement a plan for ongoing, comprehensive language assessment that supports the curriculum
4. Identify benchmarks for alternative assessment and utilize them to develop goals and intervention programs
5. Develop appropriate language, communication, and literacy goals
6. Develop a plan for the management of AAC technology
7. Facilitate teams that function to support student achievement
8. Use strategies for supporting students' ability to develop and maintain meaningful social relationships
9. Modify classroom activities to ensure student participation and achievement
10. Formulate strategies for measuring progress and assigning grades
11. Build a supportive classroom community

The material in the book is written for current and future professionals, primarily educators and speech-language pathologists, challenged with supporting students who require AAC and maximizing their achievement relative to the academic curriculum and social demands of school settings. We anticipate that individuals seeking advanced-level information on assistive technology and the education of students with disabilities will also find value in it as well.

The book was authored by clinicians, teachers, and researchers, many of whom work in the "trenches" providing communication supports in educational settings for children with AAC needs. Their information is both relevant and timely for those working in the dynamic atmosphere of educational settings who wish to better serve students with significant communication difficulties. As

Eric Hoffer observed, “In times of change learners inherit the earth; while the learned find themselves beautifully equipped to deal with a world that no longer exists” (as quoted in Jordan & Follman, 1993).

This book is organized into three sections: assessment, instruction and intervention, and supports. In the first section, Ahlgrim-Dezell (Chapter 1) sets the foundation by exploring some of the key issues that guide educational assessment for students with AAC needs, including legislative mandates and other practice realities. The assessment section continues with the chapter by Downing (Chapter 2), who provides essential information about how the skills of beginning communicators should be assessed. The chapter that follows, by Proctor and Zangari (Chapter 3), looks at assessing specific receptive and expressive language skills in students who use AAC. Foley, Koppenhaver, and Williams collaborated on two separate chapters on literacy assessment, looking at the principles and practices relating to the evaluation of reading (Chapter 4) and writing skills (Chapter 5).

The chapters in Section II, Instruction and Intervention, review key concepts, issues, and strategies for instruction and intervention with students who use AAC. Soto (Chapter 6) takes on the task of relating current thinking on academic adaptations to the specific case of students who use AAC. Kent-Walsh and Binger (Chapter 7) deal with intervention for students who use AAC and are at the early stages of communicative and language development. Zangari and Van Tatenhove (Chapter 8) focus on maximizing the language learning and proficiency of students with more advanced language skills. Erickson and Clendon (Chapter 9) articulate issues and strategies for students at the earlier stages of literacy skill development. More conventional reading and writing skills, and their relationship to the curriculum, are addressed by Light and McNaughton (Chapter 10). An elegant chapter by Hunt, Doering, Maier, and Mintz (Chapter 11) provides important information for communication partners seeking to facilitate social interaction and friendships in students who require AAC. The complex issues involved in integrating AAC with other assistive technology and with the curriculum are tackled by Gillette (Chapter 12).

Section III of this book covers topics important to the support of students who use AAC and their educational teams. Robinson and Solomon-Rice (Chapter 13) describe issues and strategies for effective teamwork and collaboration. Wilkinson and Hennig (Chapter 14) look specifically at aided communication in students who use AAC and address issues of cognition, memory, and attention.

This book was conceptualized and written with certain underlying assumptions. Students with AAC needs are educated in a wide variety of educational situations. Their experiences differ within and across grade levels, educational models, and curricula. In many places throughout the book, we struggled with balancing the “real” and the ideal, recognizing that the principles and practices described here are not uniformly valued or implemented across school districts. Among the most important assumptions reflected in this book is that professionals must be committed to providing access to the general curriculum for all students, regardless of their needs and abilities. The challenge of how to make that happen in a meaningful way is one which, we predict, will be a source discussion for many years to come. We greatly appreciate the opportunity to contribute to that important conversation.

REFERENCE

- Jordan, W.R., & Follman, J.M. (Eds.). (1993). Using technology to improve teaching and learning. *Hot Topics: Usable Research* (p. 1). Palatka, FL: NEFEC/SERVE, Regional Vision for Education. (ERIC Document Reproduction Service No. ED355930)

About the Editors

Gloria Soto, Ph.D., Professor, Department of Special Education and Communication Disorders, San Francisco State University, Burk Hall, 1600 Holloway Avenue, San Francisco, CA 94132

Dr. Soto is a full professor in the Department of Special Education and Communication Disorders at San Francisco State University. She has extensive experience serving students with AAC needs in school settings. Her research areas focus on interventions to support the academic, language, and social development of students with AAC needs in general education classrooms and other school settings.

Carole Zangari, Ph.D., CCC-SLP, Director, Tyler Institute, Nova Southeastern University, 3301 College Avenue, Ft. Lauderdale, FL 33314

Dr. Zangari is a professor of speech, language, and communication disorders in the Fischler School of Education and Human Services at Nova Southeastern University, where she directs the Tyler Institute. Dr. Zangari teaches a variety of AAC classes to master's and doctoral students and to practicing professionals in the postmaster's AAC specialization. In addition to AAC, Dr. Zangari has interests in the area of online teaching and support to families and teams serving children with significant communication difficulties.

For more, visit here: <https://products.brookespublishing.com/Practically-Speaking-P110.aspx>

Contributors

Lynn Ahlgrim-Delzell, Ph.D.

Assistant Professor
Department of Educational Leadership
University of North Carolina at Charlotte
9201 University City Boulevard
Charlotte, NC 29223

Cathy Binger, Ph.D., CCC-SLP

Assistant Professor
Speech and Hearing Sciences
University of New Mexico
1700 Lomas NE
MSC01 1195
Albuquerque, NM 87131

Sally A. Clendon, Ph.D.

Senior Lecturer
Speech Language Therapy Programme
School of Education at Albany
Massey University College of Education
Post Office Box 102 904
North Shore Mail Centre
Auckland, New Zealand

Kathy Doering, M.A.

Instructor
Department of Special Education
San Francisco State University
1600 Holloway Avenue
San Francisco, CA 94132

June E. Downing, Ph.D.

Professor Emeritus of Special Education
California State University, Northridge
3661 North Round Rock Drive
Tucson, AZ 85750

Karen A. Erickson, Ph.D.

Associate Professor and Director
Center for Literacy and Disability Studies
University of North Carolina at Chapel Hill
CB# 7335 TR#46 Mason Farm Road
Chapel Hill, NC 27599

Beth E. Foley, Ph.D., CCC-SLP

Department Head
Communicative Disorders and Deaf
Education
Utah State University
1000 Old Main Hill
Logan, UT 84322

Yvonne Gillette, Ph.D.

Professor
School of Speech-Language Pathology and
Audiology
The University of Akron
Akron, OH 44325

Shannon C. Hennig, M.S.

Speech-Language Clinician
TalkLink Wellington
Post Office Box 24 070
Wellington 6142
New Zealand

Pam Hunt, Ph.D.

Professor
Department of Special Education
San Francisco State University
1600 Holloway Avenue
San Francisco, CA 94132

**Jennifer Kent-Walsh, Ph.D., CCC-SLP,
S-LP(C)**

Assistant Professor and FFAST Center
Director
Department of Communication Sciences &
Disorders
University of Central Florida
4000 Central Florida Boulevard
HPA II, Room 101X
Orlando, FL 32816

David A. Koppenhaver, Ph.D.

Associate Professor
Language, Reading, and Exceptionalities
Department
Reich College of Education
Appalachian State University
124 Edwin Duncan Hall
Boone, NC 28608

Janice C. Light, Ph.D.

Distinguished Professor
Department of Communication Sciences and
Disorders
The Pennsylvania State University
308 Ford Building
University Park, PA 16802

Julie Maier, M.A.

Instructor
Department of Special Education
San Francisco State University
1600 Holloway Avenue
San Francisco, CA 94132

David McNaughton, Ph.D.

Associate Professor
Graduate Program in Special Education
The Pennsylvania State University
227 CEDAR Building
University Park, PA 16802

Emily Mintz, M.A.

Doctoral Candidate
University of California, Berkeley/
San Francisco State University
1600 Holloway Avenue
San Francisco, CA 94132

Lisa A. Proctor, Ph.D.

Professor
Communication Sciences and Disorders
Missouri State University
901 South National Avenue
Springfield, MO 65897

Nancy B. Robinson, Ph.D., CCC-SLP

Associate Professor
Department of Special Education and
Communicative Disorders
San Francisco State University
1600 Holloway Avenue
San Francisco, CA 94132

Patti L. Solomon-Rice, M.A., CCC-SLP

Joint Doctoral Program in Special Education
University of California, Berkeley/
San Francisco State University
1600 Holloway Avenue
San Francisco, CA 94132

Gail Van Tatenhove, M.S.

Speech-Language Clinician
Private Practice
8322 Tangelo Tree Drive
Orlando, FL 32836

Krista M. Wilkinson, Ph.D.

Professor
Communication Sciences & Disorders
404 Ford Building
The Pennsylvania State University
University Park, PA 16802
(previously Associate Professor,
Communication Sciences & Disorders,
Emerson College)

Amy R. Williams, M.A.

Adjunct Faculty
Language, Reading, and Exceptionalities
Department
Appalachian State University
730 Rivers Street
Boone, NC 28608

For more, visit here: <https://products.brookespublishing.com/Practically-Speaking-P110.aspx>

6

Academic Adaptations for Students with AAC Needs

Gloria Soto

Special education legislation has gradually specified that the general education curriculum should be the primary *content* of the education of students with disabilities and the instructional activities used to implement it are the primary *context* for these students to receive instruction. The need to develop appropriate adaptations has intensified as students who rely on augmentative and alternative communication (AAC) are provided access to general curriculum activities. Educators and related services professionals must be able to identify and develop the most appropriate instructional adaptations to support the participation of these students in the general curriculum goals and activities. It can be a daunting task. This chapter discusses current issues and effective practices central to the development of adaptations for students with AAC needs. The chapter begins with a discussion on the access to the general curriculum mandate and then moves to development of adaptations to support the participation of these students in the general curriculum.

ACCESS TO THE GENERAL CURRICULUM: WHAT DOES IT MEAN?

The Individuals with Disabilities Education Act Amendments (IDEA) of 1997 (PL 105-17) introduced important changes in the provision of special education services for students with disabilities. One of the most significant changes concerns the requirement that students with disabilities receive *access* to the general curriculum. Specifically, the amendments require that students with disabilities be involved in and make progress in the general curriculum to the maximum extent appropriate (Wehmeyer, Lattin, Lapp-Rincker, & Agran, 2003). The requirement to maximize students' involvement in the general curriculum means that students receiving special education services have the right to participate in the same instructional activities, with the same materials, and in the same progress-monitoring activities used with typically developing students. These mandates were explicitly articulated partly because special education had often been misunderstood as a parallel curriculum and students with disabilities had, for the most part, been omitted from the general education curriculum (Turnbull, Turnbull, Wehmeyer, & Park, 2003).

Spooner and Browder (2006) noted that access to the general curriculum is not synonymous with inclusion. According to IDEA 1997, special education is specially designed instruction to support the child's participation in the general curriculum, regardless of the setting where the student is being educated. Although general education settings may be easier and more likely to provide access to the general curriculum, inclusion is neither a prerequisite nor synonymous with general curriculum access (Wehmeyer et al., 2003). The focus of the access to the general curriculum mandate is not on *where* students are to be educated but on *what* is the content of the students' educational program. Students in all types of education settings must have access to their state's general curriculum (Spooner & Browder, 2006).

IDEA 1997 and the No Child Left Behind (NCLB) Act of 2001 (PL 107-110) further stipulated that states include students with disabilities in large-scale state assessments and specified that those assessments be linked to academic content standards, with accommodations when needed

(see Chapter 1 for an extensive discussion of educational assessment). By requiring that all students be included in large-scale assessments and specifying that those assessments be linked to academic content standards, current policy implies the need to align instruction with academic content standards and teach language arts, mathematics, and science to all children regardless of the extent of their disabilities and the setting where they are being educated (Browder, Spooner, Wakeman, Trela, & Baker, 2006).

States are allowed to design alternate performance assessments for students with the most significant disabilities who are significantly below grade level and cannot participate in the statewide assessment system. These assessments are linked directly to the state's general content standards and reflect the portions of the content standards from kindergarten through high school that are accessible to students with the most significant cognitive disabilities (Browder et al., 2004). In addition to being aligned with academic domains, alternate achievement standards must also address the functional needs of these students (Browder et al., 2004; Browder, Wakeman, & Flowers, 2006). Yet, the expectation for all students is to have access to the academic content for their assigned grade level. For example, an 11-year-old student with disabilities who is in fifth grade will be exposed to the history and literature typically taught for this grade level but with simplified content and outcomes that differ from grade-level attainment. For instance, the student might use picture symbols to indicate the main character, the setting, and the sequence of events of a story that is read to him.

WHAT IS THE GENERAL CURRICULUM?

The general curriculum is often referred to as the state's academic content standards or the content to be learned by typically developing students at each specific grade level (Browder, Spooner, et al., 2006; Spooner & Browder, 2006; Wehmeyer, Lattin, & Agran, 2001). Content standards identify the knowledge, skills, and understanding that students should demonstrate in academic areas (Turnbull et al., 2003). Because there is no national curriculum, each state determines priorities for student learning and has its own standards (Browder, Spooner, et al., 2006). Thus, it is critical that clinicians and special educators become familiar with their own state standards and grade-level curriculum. These can typically be found on each state's educational agency web site.

The general curriculum is organized across academic domains, typically language arts, mathematics, science, social science, and so forth. Some states also include a life skills curriculum. Within each academic domain, the general curriculum includes the scope and sequence of skills students are to meet within and across grade levels. The general curriculum also includes the instructional materials used by teachers to work on the content standards, such as textbooks and worksheets adopted by the school system, as well as the activities used to monitor student progress, such as large-scale assessments to determine whether students are making progress in achieving state standards.

Although current policy involves the need for assessment of academic standards linked to grade-level content, it does not prevent the inclusion of instruction in functional skills that students with disabilities need (Browder, Wakeman, et al., 2006). Although most people in the special education community welcome the mandate for access to the general curriculum and the increase in expectations for students with disabilities, many warn that an emphasis on academic content alone runs counter to the ultimate intent of IDEA 1997, which is to prepare individuals with disabilities to live productive and independent adult lives to the maximum extent possible (Ford, Davern, & Schnorr, 2001; Hunt, Quirk, Ryndak, Halvorsen, & Schwartz, 2007; Turnbull et al., 2003). Academic outcomes are important, and measuring them is necessary, but not sufficient, to achieve the global outcome of quality of life for students with disabilities and their families. The unique needs of each individual requires educators to also address quality-of-life domains such as social-emotional adjustment, independence and responsibility, physical health, and communication (Hunt et al., 2007). For instance, for students with AAC needs, the curriculum needs to include both the general education curriculum as set forth by each state as well as additional curricular domains addressing their specific

needs. In addition to the academic curriculum, students with AAC needs will require a specialized and intensive curriculum in other areas such as operational, strategic, linguistic, and social competence; functional life skills; and vocational and community-based instruction.

HOW CAN STUDENTS WITH DISABILITIES PARTICIPATE IN THE GENERAL CURRICULUM?

Involving students with disabilities in the general curriculum requires changes at multiple levels in the way special education instruction has been traditionally delivered. In fact, Wehmeyer and Agran (2006) have suggested changes at the district, school, and classroom level in a comprehensive reform. Districtwide, comprehensive reform efforts are necessary to ensure that content areas important to students with disabilities (e.g., functional or life skills) are well integrated into mandated areas such as reading, science, and mathematics. At the school level, administrators and faculty need to articulate a shared vision and a process to ensure that children with diverse abilities are successful and participate in the general curriculum to the maximum extent possible. This may include schoolwide implementation of positive behavior supports, disability awareness, flexible groupings, community-building activities, curriculum mapping, and Universal Design for Learning (UDL; Browder, Spooner, et al., 2006; Browder et al., 2007).

Universally designed classrooms respond to and accommodate the needs of all learners by addressing the barriers that can prevent student learning. Typically, educators and clinicians use a UDL plan for adaptations at three levels: representation, expression, and engagement. *Representation* often refers to how information is presented to students (i.e., input). Teachers incorporate UDL principles when they present content to students in multiple formats such as oral statements, text, digital text, graphic symbols, visual organizers, online resources, video-based materials, highlighters, and peer or adult supports. *Expression* refers to the need for alternate methods for responding (i.e., output) to the instructional content, which typically requires speaking, writing, manipulating, or drawing. Teachers incorporate UDL principles when they allow students to respond to content using multiple modalities such as speech-generating devices, adapted keyboards, customized software, role play, simulations, presentations, and peer-assisted assignments. Third, *engagement* includes a variety of strategies to support students' participation in the learning process (Browder, Wakeman, et al., 2006; Wehmeyer & Agran, 2006). Teachers who implement UDL principles provide students with an array of options to remain engaged and motivated, such as giving students choices regarding learning activities and materials, using multiple work locations, varying the length of activities, varying feedback strategies, and using adapted vocabulary (Salend, 2008). The Center for Applied Special Technology web site includes resources and tools to support clinicians and educators in the implementation of UDL principles (see <http://www.cast.org>).

Differentiated instruction (DI) is another reform that can be incorporated at the classroom level. DI is premised on the idea that *all* learners do not learn in the same way and refers to the practice of ensuring that each learner receives the methods and materials most suitable to his or her needs and abilities. Teachers who use DI incorporate the principles of UDL by using strategies that address students' strengths, interests, skills, and abilities in flexible learning environments (Hoover & Patton, 2004). During the course of a unit, a teacher who implements DI uses a wide range of instructional materials in a variety of formats and complexities to enable all students in his or her classroom to reach the objectives of the instructional unit (Broderick, Mehta-Parekh, & Reid, 2006). Teachers who use DI acknowledge and prepare for the range of aptitudes, needs, and interests that they find in their classrooms. The assumption underlying DI is that when a student (with or without disabilities) appears unengaged or unmotivated, it is likely that the student is unable to understand the nature of the task or finds the modality of the activity unattainable.

DI requires an analysis of the expectations of the instructional unit and the development of modifications. For instance, most classroom activities require communication skills such as

participating in classroom conversations, following teacher directions, answering questions, and requesting clarifications, as well as understanding the teacher's explanations and descriptions. These expectations may be incompatible with the abilities and needs of students who use AAC. Adaptations will be necessary to ensure student participation. The following sections of the chapter describe specific tools, processes, and strategies for designing adaptations at the classroom and the instructional activity level to ensure participation and achievement in the general curriculum for students with AAC needs.

Due to the complex needs of students who rely on AAC, a comprehensive implementation of adaptations to ensure access to the general curriculum requires the collaboration of general educators, special educators, related services personnel, and family members. Indeed, many of this book's chapters identify a number of critical methods and strategies to support students' participation in curricular activities, such as communication strategies (Chapters 7 and 8), peer supports (Chapter 11), assistive technology (AT) integration (Chapter 12), and collaborative teaming (Chapter 13).

ADAPTATIONS TO PROMOTE THE PARTICIPATION OF STUDENTS WHO RELY ON AAC

The changes mandating the use of the general curriculum as the *content* and *context* for instruction and intervention for students with disabilities present the educational team with enormous opportunities and significant challenges. First, educators, clinicians, and families have a greater opportunity to reverse the trend of lowering standards for students with disabilities, which often reflects negative stereotypes of disability and biases against their participation in general education (Ford et al., 2001; Hoover & Patton, 2004; Turnbull et al., 2003). Instead of lowering standards or deriving parallel standards, educational teams are now challenged to do what is necessary to help students achieve proficiency within the state-mandated standards. Thus, educators must adapt specific instruction to ensure that all students are provided with opportunities to acquire content and skills associated with each standard. This requires a solid understanding of the curriculum and its components as well as methods and strategies to individualize instruction without resorting to a parallel curriculum, separate location, or special pull-aside activities (Ford et al., 2001; Hoover & Patton, 2004). There is an emerging body of literature in the special education field addressing evidence-based strategies to provide access to the general curriculum for students with a range of disabilities, many of whom use AAC (see, e.g., Browder, Spooner, et al., 2006; Orelve, Sobsey, & Silberman, 2004; Rief & Heimborge, 2006; Salend, 2008). AAC professionals can also draw from validated models used to design curricular adaptations for students with significant disabilities (e.g., Best, Heller, & Bigge, 2005; Giangreco & Doyle, 2000; Janney & Snell, 2004; Salend, 2008; Snell & Brown, 2005; Udvari-Solner, Causton-Theoharis, & York-Barr, 2004; Wehmeyer et al., 2001). Despite differences, all models use the general education activities as the referent (Wehmeyer & Agran, 2006; Wehmeyer et al., 2001).

Adaptations at the Classroom Level

The environmental conditions of the classroom affect students' ability to acquire information and demonstrate what they have learned (Wehmeyer & Agran, 2006). Adapting environmental conditions will be necessary for students with AAC needs to attend to and cope with the multiple demands that characterize classroom instruction. The type of adaptation will depend on the nature and extent of a student's disability. The most obvious adaptation is that of the physical environment to meet the mobility, sensory, and technology requirements of students with AAC needs. Environmental modifications range from the most obvious changes to facilitate accessibility, such as adding ramps to entryways, rearranging furniture to allow wheelchair maneuvering, and modifying transportation vehicles, to modifying conditions, such as lighting, noise level, visual and auditory input, and location of materials (Udvari-Solner et al., 2004). Elements of the environment need to be carefully

engineered for students who experience sensory impairments and information processing and communication difficulties.

Classroom Layout The literature supports the importance of physical space in creating positive learning environments. Research on classroom environments indicates that different environmental layouts seem to influence a child's learning (Mastropieri & Scruggs, 2006; Rief & Heimburge, 2006). *Classroom layout* refers to the spatial arrangement of the classroom (i.e., how and where students are seated in relation to the teacher and to one another, how classroom members move around the room, the overall sense of atmosphere and order). Existing research on classroom environments indicates that effective classrooms are organized to accommodate a variety of different activities, instructional groupings, and arrangements throughout the day. These may include group instruction, computer-assisted instruction, cross-age peer tutoring, instructional assistants, group instruction, and direct systematic instruction. Effective classrooms are those that minimize student distractions so that students are able to actively engage in classroom activities (Savage, 1999; Weinstein, 1992). Despite the role of classroom structure on student outcomes, there is very limited research specifically addressing how classroom layout may affect the engagement and communication opportunities available to and the learning outcomes of students with AAC needs (Hunt, Soto, Maier, Müller, & Goetz, 2002).

Creating Positive Learning Communities Through Cooperative Activities

Cooperative learning (CL) is defined as an instructional strategy in which a small heterogeneous group of students with equal status roles work together to achieve common learning goals (Jenkins, Antil, Wayne, & Vadasy, 2003; McMaster & Fuchs, 2002). CL activities provide many opportunities for peer communication as students help and support each other as they complete an instructional activity (Merritt & Culatta, 1998). By definition, *cooperative strategies* are interactive, language-based didactic structures that support the acquisition of conversational skills and social skills in general, both for children who use speech and children using AAC (Soto & von Tetzchner, 2003). During cooperation, students may provide or request information; recount past events; comment on or clarify some idea, event, or state of affair; resolve conflicts; and elaborate on others' ideas. As students acquire new competence in interacting with each other, they become partners within instructional exchanges with the opportunity to learn from and teach each other (Rogoff, Goodman, & Bartlett, 2001). A large body of literature documents the positive effects of CL on the academic achievement of students with learning disabilities (see McMaster & Fuchs, 2002, for a synthesis of empirical research), especially when CL is combined with other instructional supports such as computer-assisted instruction, reciprocal teaching, cross-age peer tutoring, instructional assistants, and direct instruction. The effects appear more robust in general education classrooms than in special education classrooms. Advocates of CL as an inclusive strategy argue that in general education classrooms, cooperative groups are more heterogeneous and hence provide more academic support to students with disabilities. The effects of CL on the academic achievement of students with significant disabilities are not well established. The majority of existing studies have highlighted social benefits such as increased classroom participation and interaction with peers (see Jenkins et al., 2003).

In an empirical study comparing the effects of different instructional groupings on the social acceptance of students with significant disabilities by their typically developing peers, Piercy, Wilton, and Townsend (2002) concluded that CL strategies resulted in higher indices of social acceptance than other types of groupings. In addition, the children in the CL group showed significant increases in positive social interaction with peers without disabilities. These findings were explained by the fact that in CL, the children had opportunities to learn about one another in multidimensional and dynamic ways. Cooperation afforded opportunities for the students with disabilities to reveal their areas of strength. They became individuals with likes, dislikes, fears, and joys, as opposed to stereotypical images.

Introduction of conversation books, peer buddy systems, and interactive activities has been found to be positively related to increases in communicative interaction between children who rely

on AAC and their typically developing peers (see Chapter 11). Hunt and her colleagues (2002) reported that the number of reciprocal communicative interactions between students who used AAC and their typically developing peers in a general education classroom increased whenever CL activities were used. The authors were able to conclude that the use of CL activities with adaptations and support from peer partners promoted the students' active participation.

Peer support intervention is a strategy that seems to be more effective for students with significant disabilities than traditional CL (Carter & Kennedy, 2006). Peer support intervention uses one or more chronologically matched typically developing peers to provide academic and social support to a student with significant disabilities. In this type of approach, peers are trained to provide support by adapting instructional activities, communicating with and providing feedback to the student with disabilities, and, when appropriate, implementing positive behavior support strategies. When compared with other support strategies, it appears that peer support interventions contribute to improved academic performance, decreased levels of problem behavior, and increased levels of social interaction between students with and without disabilities (Carter & Kennedy, 2006; Spooner, Dymond, Smith, & Kennedy, 2006).

Adaptations at the Activity Level

At the activity level, the development of adaptations is determined by an analysis of the cognitive, sensory, motor, cultural, and linguistic demands of the instructional activity in contrast with the individual's needs and abilities. Students with AAC needs can participate in a wide range of general education activities when provided with appropriate curriculum adaptations and supports. Typically, students with AAC needs will require adaptations for the way in which the curriculum is delivered to them (i.e., presentation, input) and the way in which they are expected to engage in and respond to the curricular activity (i.e., response, output). Responding to the curriculum usually refers to the response demands, which may include writing, speaking, drawing, and manipulating.

Curriculum Presentation Students with AAC needs may have physical, cognitive, and/or sensory impairments that can make access to instructional materials a challenge (Downing, 2005). Students with AAC needs require modified access to content materials that are consistent with their sensory and motor abilities and their learning preferences and needs. Adaptations in curriculum presentation modify the way the curriculum is conveyed or imparted (Wehmeyer et al., 2001). In the classroom, information is typically presented through written text or verbally. Yet, many students with AAC needs may not have the hearing or auditory comprehension to benefit from materials being spoken or read to them. For these students, alternative symbols such as pictures, photographs, objects, or parts of objects along with print can be used instead. They may also benefit from multiple means of representation that can be modified in size, shape, color, or format (e.g., from print to pictures; Browder, Spooner, et al., 2006). Some students may have additional visual impairments that affect their ability to process information presented to them through text or graphics. These students can benefit from digitized audio, books on tape, or text-reader programs. Modifications of the sensory characteristics of a learning environment are also necessary for students who have processing difficulties. These may include changes in lighting, background color, glare, noise level, or movement demands (see Blackstone, 1994, for in-depth information on the effects of vision problems on AAC system design). Using peer supports (e.g., peer buddies, peer tutors, cross-age peer tutors), personalized scaffolding, and options for repetition are ways to keep students engaged (Broderick et al., 2006).

Response Written or oral responses are the typical ways that students engage with the curriculum. Adaptations will be required for students with AAC needs who have little or no functional speech and often have no functional handwriting. There are alternative ways to enable students to express their ideas and demonstrate their knowledge, such as providing additional time for task completion, allowing for alternatives to typical means of expression such as using a switch to select

a picture, concept keyboards, word prediction programs, spell checkers, graphics and pictures, and augmentative communication devices.

In addition, it will be necessary to provide more than one opportunity per activity to demonstrate one's knowledge. Students with AAC needs will require multiple opportunities to engage with the curriculum and to practice assessment activities. Chapter 5 provides information on supportive equipment and software for students who are unable to gain access to and respond to curricular materials in conventional ways. It is also important for educators and clinicians to have a working knowledge regarding availability of appropriate technology, how to obtain equipment, and how to make effective use of technology within meaningful activities (Downing, 2006). The *Wisconsin Assistive Technology Initiative (WATI) AT Checklist* provides a simple yet effective way to identify the available range of low- to high-tech AT options that can be used to support student participation (see <http://www.wati.org>).

Adaptations at the Content Level

The adaptations described previously provide alternative ways for students with AAC needs to take in information or communicate their knowledge back to the teacher. The changes to the way the curriculum is presented to the student and the means the student uses to respond do not necessarily alter or lower the standards or expectations for a particular activity. When there is no difference in curricular expectation, one may say the student is participating in an *identical curriculum* to same-age peers, although adaptations are provided to ensure participation. These adaptations may include providing physical assistance, adapting materials, augmenting modalities, and providing different response requirements.

By contrast, a *modified curriculum* is when a student requires a substantial adaptation that results in a fundamental alteration to the content of the curriculum. In a modified curriculum lesson, the student with AAC needs participates in lessons targeting either modified grade-level standards or alternate achievement standards that are aligned to academic standards (Courtade-Little & Browder, 2005; see Chapter 1). Alternate achievement standards may reflect a narrower range of academic content (e.g., fewer objectives under a content standard) or learning less complex content at earlier grades that is considered a prerequisite to attaining grade-level proficiency (Karvonen, Wakeman, Flowers, & Browder, 2007). This shift to academic content represents a major challenge for professionals serving students with significant disabilities because they need to plan the curriculum, develop and adapt materials, and learn how to effectively teach academic skills to students with the most significant disabilities. Further complicating this shift is the lack of research-based strategies to teach general curriculum content to this population, a lack of understanding of the general curriculum among special education professionals, and the need to combine academic instruction with individual priorities represented in the student's individualized education program (IEP; Karvonen et al., 2007).

Educators need to consider both the content and demands of the curriculum and the needs and strengths of the student when making curriculum adaptations. Developing curriculum modifications for students with AAC needs requires a deliberate analysis of the cognitive, linguistic, sensory, and motor demands of the instructional activities at the content, presentation, and response levels. This analysis will assist the team in determining where the student is most likely to have difficulties and selecting appropriate adaptations. Deciding what modifications are necessary can be difficult and requires the collaboration of the entire educational team. The role of the speech-language pathologist (SLP) is critical in designing those adaptations.