Preface

Communication technology offers new and increased opportunities for individuals with special needs. Technology facilitates such diverse possibilities for individuals as providing assistive communication for a child with cerebral palsy, increasing mobility for a child with a physical disability, improving social access for an adult with special needs, engaging a youth with attention-deficit hyperactivity disorder, or offering exploration on the Internet for a student with a behavior disorder.

For many people concerned about children and adults with exceptionalities, they learn about communication technology through teachers, social workers, therapists, and people who have similar needs. This book attempts to pull together ideas about using technology based on the experiences and expertise of teachers, researchers, and other professionals.

The purpose of this book is to provide ideas for enhancing education for students with exceptionalities. We hope to provide ideas and perspectives for educators and other service providers, parents, and future educators who work with students with special needs. We have brought together scholars from an interdisciplinary approach to the book's content.

The chapters provide an array of formats, including theoretical ideas, case studies about using communication technology for students who qualify for special education, research reports, opinion pieces, reviews of literature, and product information. The manuscript acceptance rate for this book was 42%. So, in these 26 chapters, you will find both scientific research and anecdotal experiences designed to give you a balance of ideas and perspectives.

SECTION 1: FOUNDATIONS AND THEORY-BUILDING

Chapter 1: An Overview of Inclusive Education in the United States

Mokter Hossain, University of Dhaka, Bangladesh and University of Nevada, USA
This chapter gives an introductory perspective to special education in the United States from someone who is from outside the USA. The author provides a foundation for the chapters that follow. In addition, it is interesting to see the elements the author identifies as important or unique in the USA system. How do a nation's laws and regulations affect the way special education services are approached and provided? How has special education evolved in the United States and elsewhere?

Chapter 2: Technology to Facilitate the General Education Curriculum

Cindy K. Sherman, University of Maryland, USA
Susan De La Paz, University of Maryland, USA

In *Effects of Technology in the Classroom*, Sherman and De La Paz discuss the use of information and communication technology (ICT) in the classroom and its benefits to students, both academically and socially. They report on studies that have shown where technology has improved academic skills as well as fostered collaborative learning and enhanced peer interaction.

In addition, the authors review specific information and communication technology for students with special educational needs. They discuss narrative analysis and how to use some specific programs (e.g., *TextEase2000,* Virtual History Museum, mPower). Reading, writing, historical facts, and collaborative skills can be learned through such programs. The authors discuss new possibilities regarding the use of communication technology and address the social and academic benefits of using this technology.

As you read this article you may want to consider the following: How effective is ICT in improving the overall quality of a struggling writer's compositions? Can ICT replace traditional classroom instruction? Does the use of technology affect how students feel about learning? What instructional supports are needed from the teacher to ensure student success in using instructional software? What are the positive implications for other learning contexts?

Chapter 3: Integrated Technology for Culturally Competent Communication in Urban Schools

Maura Wechsler Linas, University of Kansas, USA
Joan E. Aitken, Park University, USA

Linas and Aitken discuss strategies teachers can use to improve their communication with urban students. Many teachers perceive problems with students, when in fact they are reacting to cultural communication differences. Technology can be used to improve interaction. How can you tell the difference between cultural influences in communication and influences from a disability? In what ways can technology bridge faculty-student communication?

Chapter 4: Understanding Students with Special Needs Self-Disclosure in Internet Chat Rooms: Applying the Communication Privacy Management Theory to Internet Communications

Narissra Maria Punyanunt-Carter, Texas Tech University, USA
Stacy L. Carter, Texas Tech University, USA

This book chapter proposes a research agenda for determining, describing, and depicting special needs students' self-disclosure behaviors via the Internet in regards to the Communication Privacy Management Theory (formerly known as the Communication Boundary Management Theory). Internet, computer-mediated communication, chat rooms, self-disclosure, and The Privacy Management Theory are all identified and summarized. The theory is presented for its usefulness and significance studying self-disclosure in Internet chat rooms among individuals with disabilities. In addition, future research directions using the theory to study individuals with special needs' self-disclosure in Internet chat rooms

are presented. Research presented in this chapter provides an overview of the impact of self disclosure on the Internet that will assist parents, teachers, and others who interact with individuals with disabilities.

The topic discussed in this chapter–application of the Communication Privacy Management Theory (CPMT) to examine self-disclosure via the Internet–offers a new perspective and significantly adds to the literature on self-disclosure in computer-mediated communication venues. The authors did a thorough job explaining the CPMT. Given the complexity of this potent approach to analyzing self-disclosure, it offers a rich array of research possibilities to examine self-disclosure in an alternative format, i.e., Internet chat rooms.

Some disabilities have characteristics of language impairments that impact the ability to develop and maintain interpersonal relationships. For example, individuals with Autism Spectrum Disorder, particularly those with Asperger Syndrome, have deficits in pragmatic language leading to problems with social interactions. As you read the chapter, consider how students might enhance their social interactions via digital communication. With the explosion of computer-mediated communication avenues--e.g., Facebook, Twitter—how do these ideas apply to other digital contexts?

Chapter 5: Using Spatial Constructivist Thinking Theory to Enhance Classroom Instruction for Students with Special Needs

Prince Hycy Bull, North Carolina Central University, USA

The emphasis in this chapter is on Spatial Constructivist Thinking Theory, which is the integration of pictures, animations, videos, color schemes, abstract plans, applets, graphics, and formatted text in a multimedia presentation to represent verbal and auditory concepts. Additional discussion revolves around Multiple Intelligences Theory and Constructivist Theory. What are some example projects and multi-media applications that interest you?

SECTION 2: ASSISTIVE TECHNOLOGY

Chapter 6: Wheelchairs as Assistive Technology: What a Special Educator Should Know

Judy L. Carroll, Munroe-Meyer Institute, USA

This innovative chapter gives important information about wheelchairs. The topic is unique in the book as it provides a focus for educators on how a wheelchair might affect a student as well as how the teacher can contribute to the management of this technology. The information is specific and valuable. How can you use this information to improve your interaction with students who use wheelchairs?

Chapter 7: Trial and Error with Assistive, Accessible, Augmentative Technology

Arthur W. Blaser, Chapman University, USA

In *Trial and Error with Assistive, Accessible, Augmentative Technology*, Blaser discusses his experiences with text to speech programs in teaching undergraduate university students. As you read this chapter, you may want to consider how some forms of instructional technology "level the playing field"

between people with and without disabilities. You may also want to consider how some new technology can increase barriers and how individuals and organizations can facilitate or frustrate access.

Chapter 8: Voice/Speech Recognition Software: A Discussion of the Promise for Success and Practical Suggestions for Implementation

Andrew Kitchenham, University of Northern British Columbia, Canada
Doug Bowes, SET-BC, Canada

The authors discuss the promise and disappointment of assistive technologies and services, specifically speech recognition software. Helpful to students with special needs, assistive technologies can be used with all students. They may require an additional type of effort from the user, however. Student training and equipment maintenance are crucial for success.

In this chapter, the authors give practical advice and raise important issues about using technology. Even if you are already a user, the suggestions will improve your effectiveness with voice recognition software. What specific strategies can you use to increase the effectiveness of speech recognition software? How can a teacher ensure that a student doesn't see the process of learning and effectively using the software as an insurmountable task?

Chapter 9: A Guide to Assistive Technology for Teachers in Special Education

Harris Wang, Athabasca University, Canada

Everyone has the right to learn and to succeed in education. For people with certain disabilities, learning can be a challenging task, and proper use of certain assistive technologies can significantly ease the challenge and help the learners to succeed. For teachers in special education, identifying and understanding existing assistive technology is an important step towards the proper use of those technologies and success in special education.

In this chapter, Dr. Wang provides a guide for teachers about assistive technologies and their uses in special education. He discusses assistive technology for people with learning difficulties, assistive technology for persons with visual impairments and assistive technology for people with hearing difficulties. Since online learning with computers and the Internet is becoming a trend in distance education, the author also talks about assistive technology for distance education, with a focus on assistive technologies for Web-based distance learning, including assistive technologies for better human-computer interaction. How can you select more appropriate assistive technology for a given learner with a specific learning need?

Chapter 10: Assistive Technology: A Tool for Inclusion

Mary Spillane, Bellevue Public Schools, USA

In this chapter, Spillane gives specific ideas about using assistive technology to allow students to actively participate in all aspects of classroom instruction. The case study of a student with significant motor and communication impairments illustrates the application of these strategies in the general education setting. How do you plan to use assistive technology to promote inclusion in your classroom?

SECTION 3: PERSPECTIVES

Chapter 11: The Student with Complex Education Needs: Assistive and Augmentative Information and Communication Technology in a Ten-Week Music Program

Helen J. Farrell, The University of Melbourne, Australia

Farrell's work contains a great deal of interesting information and has an extensive reference list for the reader. This chapter gives a broad framework for a narrow case study in music. From an Australian perspective, the author explores research and theory from topics in several core academic disciplines that relate to the application of assistive and augmentative information and communication technology in programs in special education. Research and theory relating to qualitative inquiry and evaluation in special education are explored as well as ethical issues. Farrell discusses her findings from a five-student case study.

As you read the article, consider Farrell's inclusion of Gardner's Multiple Intelligences and her ideas regarding musical intelligence. How do you think the use of music with students can serve to enhance student learning?

Chapter 12: Communication Technology Integration in the Content Areas for Students with High-Incidence Disabilities: A Case Study of One School System

Anna S. Evmenova, George Mason University, USA
Michael M. Behrmann, George Mason University, USA

In *Communication Technology Integration in the Content Areas for Students with High-Incidence Disabilities*, Evmenova and Behrmann describe a case of how instructional and assistive technology is currently being integrated in content-based instruction in one large school system. From this chapter you will learn what low-tech and high-tech tools teachers use to enhance their teaching of students with learning disabilities and emotional/behavioral disorders. The top technologies used in elementary, middle, and high school settings in language arts, math, science, and social studies are discussed.

Evmenova and Behrmann offer an example of how technology integration is facilitated and supported in this model school system. Creative and innovative ways to use assistive and instructional devices and programs in academic areas are also provided. As you read this article, you may want to consider (a.) the status of existing research on assistive and instructional technologies for students with learning disabilities and emotional/behavioral disorders; (b.) existing technology-based tools to support students in reading, writing, math, science, social studies, and social skills learning; (c.) ways to facilitate and support an effective and extensive use of assistive technology in a school system; (d.) major low-tech and high-tech assistive technology devices and programs used by students with learning disabilities and emotional disorders in different grade levels across subject areas; (e.) the difference between instructional and assistive technology in special education; and (f.) emerging trends in technology integration based on teachers' creative ideas. How can you use the ideas presented?

Chapter 13: Signage as a Classroom Prompt: An Evidence-Based Practice?

Ian J. Loverro, Central Washington University, USA
David J. Majsterek, Central Washington University, USA
David N. Shorr, Central Washington University, USA

Loverro, Majsterek, and Shorr give insight into human response(s) during the use of positive, negative, or neutral signage to encourage desired behaviors. The article provides information to teachers and practitioners regarding the type of language that should be used when posting signage in their classrooms to promote positive and desired student behaviors.

The chapter is written in a reader-friendly style that uses pragmatic language rather than a formal research style of language. Teachers should immediately be able to put the information into use in their classrooms. What ideas can you implement for using signage to help students?

Chapter 14: Using Social Bookmarking to Make Online Resources More Accessible

Stein Brunvand, University of Michigan-Dearborn, USA

This chapter offers a strategy to make sure students are using the Internet effectively. Brunvand shows how this technique can make online resources an accessible reality for all learners. How can you use social bookmarking to make online resources more accessible?

Chapter 15: Reflections on Teaching Students with Special Needs in an Online Master's Program

Lora Cohn, Park University, USA

This article gives the perspective of a college faculty member working with students who have exceptionalities. Cohn finds that by adapting for students with special needs, she is able to improve instruction for all students. How can you apply the author's perspective to improve learning for all students in your programs?

Chapter 16: Using Tactile Prompts to Increase Social-Communicative Skills with Children with Autism

Judah B. Axe, Simmons College, USA

Although this chapter interprets "technology" in a broad context, Axe provides specific ideas about how to use tactile prompts for students with autism spectrum disorders (ASD). As social-communicative skills are a major indicator of general success for students with ASD, the strategies in this chapter gives help to those working with this increasing population. How can you use prompts to increase communication skills?

Chapter 17: Personal Reflections on the Educational Potential and Future of Closed Captioning on the Web

Sean Zdenek, Texas Tech University, USA

We think you will enjoy this chapter. It speaks to an important area of need for many people, including those from populations teachers don't readily think about because they are no longer in school, such as soldiers returning from overseas military duty and the elderly.

Teachers will find the information useful in meeting the needs of students with hearing loss, deafness, or no hearing loss. The chapter could be useful for some students who have auditory processing difficultly. The multiple Web references and citations make this article particularly appealing. We also appreciate the Web shot that was included within the text because it provides a perfect illustration regarding the author's perspective. If you are involved in Web work, how can you ensure that your site provides the best possible access for everyone who wants to use the site?

Chapter 18: Parental Communication About the Needs of Their Children: As Expressed in an Online Support Group

Joan E. Aitken, Park University, USA

Many students with disabilities have multiple exceptionalities. Sometimes a student with a disability has exceptionally high intelligence, creating unique challenges for adapting to the child's needs. This chapter examines an online support group for parents and families of students with double exceptionalities. A content analysis was conducted of more than 1000 emails from a listserv support group for parents, who seemed most concerned about the following: How to deal with professionals (e.g., teachers, physicians), family, testing, and diagnosis of disability, communicating with educators and the school context, Individualized Education Program (IEP) team meetings and reports, and family dynamics.

The findings suggest that the communication skills about which parents are most concerned are writing and reading. Less emphasis was placed on discussion regarding their children's listening, speech communication, and nonverbal communication. Additional concerns included diagnosis, parenting stresses, and communication with professionals. How could you go participate in a parent's group to gain insights into their concerns about services for their children? What can you do to increase your empathy and understanding of the family context?

SECTION 4: LEADING CHANGE

Chapter 19: Are You SMARTer Than a SMART Board™? How to Effectively Use This Technology Tool to Communicate in a Classroom with a Diverse Group of Learners

Mandi Sonnenberg, Rockhurst University, USA

Sonnenberg offers ideas about interactive white boards and how to use them effectively in classroom settings ranging from elementary schools through university classrooms. Many teachers still have little or no training in how to use this highly adaptable interactive technology. If you don't have access to a

Smartboard, what fundraising approach might you use to obtain the technology? Once you have access to the technology, how can you use the Smartboard to maximize effective instruction?

Chapter 20: Reading By Listening: Access to Books in Audio Format for College Students With Print Disabilities

Marni Gail Jones, Dickinson College, USA
Christopher L. Schwilk, Shippensburg University, USA
David F. Bateman, Shippensburg University, USA

The authors provide an incredible plethora of information for novice and experienced teachers and practitioners about the importance of using technology to assist students with special reading or print needs. The information on specific ideas about teaching strategies and resources is invaluable. Every teacher who instructs students with reading disabilities should have a copy of this chapter! We also found the case study section to be interesting as well as illustrative regarding various scenarios regarding student access to technology.

Topics of discussion include a definition of print disability, legal considerations, assistive technology, and reading while listening. The chapter gives information about more than a dozen specific technology packages and services, such as Kurzweil Readers, DAISY, Bookshare, and Digital Talking Books. The potential of such technology is considered in balance to the potential problems and setbacks.

Whether you are interested in school-age or life-long learning, this chapter will give you ideas you can use. As you read about the many options available to teachers and students of all ages, how will you ensure that students are able to use the services they need? What implications are there for students without diagnosed disabilities?

Chapter 21: Integrating Accessible Multiplication Games into Inclusive Classrooms

Cindy L. Anderson, Roosevelt University, USA

Anderson's chapter is straightforward regarding the design of the study. We were particularly impressed by the author's inclusion of student surveys to discover student impressions of the games and the helpfulness of their use in understanding math concepts. You may be interested in the snapshots of the games that were in use. They will help you understand how the games were played and lend insight into the student comments via the survey they participated in at the conclusion of the trial period.

There is an extensive literature review that can serve as a good resource to teachers and graduate students who are looking for additional information regarding the use of accessible math games. Additionally, the article provides a historical background of the concept of universal design, where and how it originated, and how differentiated instruction is essential to the success of students who would have, in the past, been sent to a resource room for daily math instruction.

Anderson provides an interesting study about using mathematical games for teaching. Although students who use the games and students who do not use the games all learn their multiplication facts, the use of gaming is an interesting way to involve students. When a study groups student data, there is no way to know if a specific teaching method is particularly successful with one individual student. For the student with a particular special need, do you think you could make learning more effective through the use of games?

Chapter 22: Do You See What I'm Saying? Ultrasound Technology as a Tool for Pronunciation Instruction

Bryan Meadows, University of Texas Pan-American, USA

This chapter is unique in the book and offers an excellent contribution. Even if you know nothing about this topic, if you have worked with student pronunciation, then you realize how extremely difficult this instruction is. What applications do you see as possible for helping students through this technology? You may want to do some research in your area to see if the technology can be made available for working in this way with students with disabilities.

Chapter 23: What Do You Do With a Digital Pen?

Judith Carlson, Rockhurst University, USA

Carlson provides an array of ideas about how teachers and students can use a digital pen to facilitate educational success. She discusses how the pen may be used to accommodate difficulties across content areas. Due to the cost factor and time required for set-up and maintenance, it is important that educators have a plan for appropriate implementation before investing in this technology. How can you make sure you are using this technology to its best advantage?

Chapter 24: Communication Technologies for Instructional Use: Linear and Nonlinear Tools Contributing to Student Learning

Seok Kang, University of Texas at San Antonio, USA

In this chapter about communication technologies as instructional tools, Kang discusses the effectiveness of communication technologies for teaching. Kang emphasizes that the efficiency of the tools depends on what and how they are used. Further, Kang addresses that learner characteristics and/or available facilities determine the effect of communication technologies as instructional tools. Kang introduces and assesses linear technologies such as Screenr® and Ispring® and nonlinear technologies such as Wimba®, Turning Technologies®, or Second Life®. Kang identifies advantages and possible disadvantages of the tools. Kang concludes that instructors can find the best-fit tools for their course objectives, materials, student ages, and difficulty levels. Which of these tools do you think would be the most useful to you? Do you find the forward rush of technology to be intimidating? What can you do to make sure you are using technology in the best ways possible?

Chapter 25: Teaching What We Don't Know: Failing to Adequately Prepare Teachers to Use Technology for the Benefit of Students with Special Needs

Joy E. Harris, University of Tampa, USA

Wendy Kaufman (2010), National Public Radio correspondent, recently reported that "one million (1,000,000) new technology-related jobs will be created over the next four or five years—an increase of about 10 percent." What this means is that today's teachers will be charged not only with preparing their students for these million new technology jobs but also for countless other jobs that heavily rely on technology. Harris discusses her perspective that teacher education (TE) programs are not adequately preparing their graduates to handle the task of educating typically-achieving students for the digital

workplace. To make matters worse, the needs of students with exceptionalities are almost completely ignored by current TE programs.

Before you read this chapter, pause for a moment to think specifically about the technological literacy needs of students with exceptionalities in inclusive classrooms. Then, make a prediction of the number of hours you think that TE programs in general, spend educating teacher candidates how to help students with exceptionalities use technology effectively. Finally, predict the number of hours that TE programs, which specifically fall under the auspices of accrediting bodies, such as the National Council of Accreditation for Teacher Education (NCATE), require in this area. The answers may surprise you.

As you read the chapter, consider the following questions: What implications might there be for exceptional students growing up in a digital world when their teachers are not utilizing technology in pedagogically sound ways? What evidence exists that accredited teacher education programs produce teachers who are more highly prepared to teach students with exceptionalities in inclusive classrooms than non-accredited programs? How might teacher education programs be restructured so that the needs of students with exceptionalities are more effectively being met? What advantages might there be in infusing technology throughout teacher education programs as opposed to teaching technology in isolation? How many credit hours should teacher education programs require in the area of **(**a.**)** educational technology in general? **(**b.**)** educational technology for students with exceptionalities?

Chapter 26: Ten Hot Assistive Tech Websites That You Won't Want to Miss

Alex Thompson, Retired Consultant, USA

A search of the World Wide Web returns thousands of sites related to assistive technology. This final chapter provides an excellent starting point for your personal journey. These ten quality assistive technology websites create a roadmap for research into the complex field of assistive technology. What constitutes an important and useful website? What additional websites can you find that are particularly helpful?

ADDITIONAL INFORMATION

Finally, we have added abbreviations of many terms, a glossary of definitions, and information about the contributors. In this collaborative effort, the reviewers, authors, and editors have worked to provide you with up-to-date research, thoughts, and perspectives. We hope you will find important and useful ideas and information within these pages.

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