

## Preface

The topic of autism attracted the editor's attention in his capacity as the department chair and coordinator of the graduate Instructional Technology program at Chestnut Hill College in Philadelphia, USA. Some of the special education teachers enrolled in the program needed particular competencies in educational technologies and tools for children with disabilities. Moreover, as a result of the legislative changes and improved diagnostic techniques, institutions of higher education enhanced their requirements to students seeking teaching or related certifications (such as Instructional Technology Specialist) within the K-12 system. The state requirements followed the enhanced focus on serving students with disabilities at the federal level, from the landmark *Public Law 94-142, The Education for All Handicapped Children Act* (EHA) to *PL 108- 456 The Individuals with Disabilities Education Improvement Act* of 2004 (IDEA, 2004).

At the same time, among the disabilities covered by the legislation at both, state and federal, levels, autism and related disabilities became the most diagnosed condition (or a range of conditions) in children and young adults (Autism Society, n.d.; DSM-5, 2013). In the educational environments, some of the problems experienced by those on the autism spectrum could be classified as learning disabilities. As defined by the IDEA, a learning disability “refers to a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in imperfect ability to listen, speak, think, write, spell or to do mathematical calculations” (IDEA, 2004; Learning Disabilities Association of America, n.d).

These developments contributed to the editor's interest in the educational and counseling support for autism-related learning variabilities and problems. In the context of the new Pennsylvania Department of Education (PDE) requirements for Instructional Technology Specialist candidates, the editor implemented a special course, *Instructional Technology and Special Education*, for students seeking PDE-approved Instructional Technology Specialist certification. The course was later modified and tested with a special focus on Autism Spectrum Disorder (ASD) focused support practices. The assessment and outcomes of this course (utilizing robotics for ASD support) are presented briefly in the introductory chapter.

In the editor's experience, an effective evaluation of educational technologies and tools would be fundamentally incomplete without a thorough understanding and evaluation of the related special education practices as well as psychological and neurological issues specific for ASD. In general, the combined use of multiple support strategies corresponds to the multifaceted nature of autism-related learning variability, with impact of multiple factors -- from neurological to social -- on the learning process (Lerner, 2013). That is how the idea of this book was born and the project took its current form – as a comprehensive guide on psychological counseling, special education teaching methods, and assistive/instructional technology support for children and young adults on the autism spectrum.

The concept of an ASD-related support guide for educators was received with enthusiasm from colleagues and parents alike. The project attracted interest from researchers and practitioners in the areas of psychology, special education and instructional/assistive technology. The topic of autism support proved to be popular and important not only in the United States, but across the globe. This enthusiasm is reflected in the international profile of our authors. The book contains material from the experts residing in the United States, Japan, India, Malaysia, Italy, and Australia. In the next section, we present a brief overview of the book's content.

The introductory chapter sets the stage for introducing the reader to the multifaceted approach to educational and technology support for children and young adults diagnosed with ASD. Considering that all sections of the book are conceptually interrelated, the reader is encouraged to review selected chapters from each section, in order to benefit from the multi-disciplinary approach lying at the foundation of this project.

## **BOOK CHAPTER OVERVIEW**

The book "Supporting the Education of Children with Autism Spectrum Disorders" is organized into four parts, beginning with the Introduction and, then, consistently presenting sections covering particular aspects of ASD support, from counseling to special education and educational/assistive technology.

Section One, "Introduction," presents the chapter by Yefim Kats, "Educational Leadership and Integrated Support for Students with Autism Spectrum Disorders," which serves as an introduction to the book, with the focus on integrating leadership skills with counseling, educational, and technology support modes for children and young adults diagnosed with ASD. The interaction between different support aspects is illustrated by the case study of the college-level robotics-based course developed for K-12 technology facilitators working with the ASD population.

Section Two, "Psychological and Counseling Support for Children and Young Adults with ASD," is focused on a variety of issues related to neurological aspects of ASD, counseling support and behavior management. This section begins with the chapter by Scott Browning and Loren Pease on academic transition of young adults on the autism spectrum. The authors discuss the role of relevant stakeholders in support and counseling activities, including school administration, faculty, admission office, learning support and disability/counseling offices. In this context, they consider a variety of factors potentially enhancing high school and college students' success in transitioning to a new academic environment.

In the next chapter, Kate Altman analyzes social experiences of college students on the autism spectrum. The chapter is based on in-depth interviews of college students diagnosed with ASD regarding their social experiences. The results of phenomenological analysis reveal common themes such as feelings of acceptance, friendship and self-esteem; the author's conclusions and recommendations may be used by multiple parties, including prospective students, their parents and educators.

KayDee Caywood and Dominique Langford Rousseau present in their chapter a mixed-method study with the focus on preparing high school students with autism for gainful employment through participation in the 'transition to work' program. The research is empirically based and includes surveys and interviews of students, parents, employers and other stakeholders. The authors generalize their findings by identifying the factors crucial for the successful employment transition and provide recommendations beneficial for students, parents, and others involved in support and counseling process.

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Section Three, “Special Education Support for Children and Young Adults with ASD,” offers a detailed discussion of special education techniques, assessment methods and best practices for children and young adults diagnosed with Autism Spectrum Disorders. In the first chapter, Soonhwa Seok and Boaventura DaCosta present a quantitative research study with the focus on the relationship between teachers’ priorities and students’ achievements at special education schools. The research was conducted at the private and public schools in South Korea and includes surveys of faculty. The authors generalize their findings by identifying the key teachers’ priority factors and provide implementation recommendations potentially enhancing students’ success.

In their chapter, Shigeru Ikuta and coauthors investigate the use of handmade materials in the education of autistic children with language disabilities. They demonstrate the examples of using such materials in conjunction with e-Books and multimedia applications, and provide practical information on the design and use of handmade sheets and dot codes in special education and general educational settings.

In the last chapter of Section Three, Lina Gilic and Michelle Chamblin present a detailed discussion and analysis of behavior functions typical for students with autism. Their chapter is focused on identification of relevant functions of behavior and on the best practices for behavior management in inclusive classroom environment. Among the key topics covered are functional behavior assessment and behavior intervention plans.

Section Four of the book, “Technology Support for Children and Young Adults with ASD,” offers a detailed discussion of available hardware tools and software applications supporting special education and counseling activities for children diagnosed with ASD. In the first chapter, Fabrizio Stasolla and his coauthors review typical uses of assistive technologies for children on the spectrum. The authors’ research addresses support for communication and social skills as well as behavior management issues. The discussion of implications of technology-based educational and counseling practices provides an excellent source of information for teachers, counselors and administrators.

The next chapter by Katharine Beals examines the role of remediation and assistive technologies focused on verbal communication skills. The author specifically considers deficiencies at the sentence-level comprehension and production. She reviews a number of available software programs such as GrammarTrainer, SentenceWeaver, SentenceBuilder, and MACH among others. The chapter concludes with the discussion of the relevant pedagogical issues and the relationship between assistive and remediation technologies.

In their chapter, Edmon Begolli, Jeanine A. DeFalco, and Cristi Ogle consider computer-based environment use for education of children and young adults diagnosed with Autism Spectrum Disorders, with a special focus on the role of virtual and augmented realities in teaching and therapy. They specifically focus on the role of these technologies for development and correction of social skills. The chapter is a useful source of information for educators, as well as therapists, working with the ASD population.

In the next chapter, Anurag Sharma and coauthors offer a broad overview of available hardware tools and software solutions supporting the education of children with Autism Spectrum Disorders, including virtual realities, robots, and mobile devices. This chapter is a valuable guide for all involved in teaching and counseling of children on the autism spectrum.

The next chapter by David Silvera-Tawil, Iva Strnadová and Therese M Cumming considers the role of humanoid robots in enhancing communication skills of children with ASD. In particular, the authors address the use of robots in conjunction with ‘social stories’ and link their approach to Applied Behavioural Analysis methodology. The chapter includes an interesting and well-presented case study of using social stories with KASPAR robotic device for a child with language comprehension and speech problems.

The chapter by Mark Tee Kit Tsun and coauthors discusses the potential significance of human tracking devices for assistive technologies. They consider the potential of tracking functionalities, ranging from electroencephalography to the Global Positioning System, for assistive technologies and tools intended for children with cognitive and developmental disabilities. The chapter concludes with a case study demonstrating the use of human tracking system for supervision of children with cognitive disabilities.

In the last chapter of Section Four, Johnny O'Connor and Keonta Jackson discuss the availability and use of iPad applications available for supporting students with Autism Spectrum Disorders in K-12 and therapeutic settings. The authors analyze in detail the criteria for selecting tablet devices and applications, and place a special emphasis on issues related to speech pathology and therapy. From this perspective, they consider the impact of using iPad applications on educational and therapeutic program outcomes.

## **CONCLUSION**

The book is intended to be a source of consolidated information for administrators, instructional technology specialists, special education faculty, instructional designers, course developers, social workers, psychologists and others working with the ASD population in educational or therapeutic environments. In particular, the book will help administrators with planning of professional development and training of instructional and support personnel. The practitioners will be provided with the latest in-depth analysis on the use of available technological solutions, instructional design methods, educational practices, and assessment techniques in the classroom or counseling settings. The book contains theoretical analyses, vital practical information and case studies, being conceived as a manual for all involved in helping those on the spectrum in online, hybrid, or face-to-face support environments.

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