

Chapter 45

Information and Computer Technology for Individuals with Autism

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ABSTRACT

The goal of this chapter is to explore the effective use of information and computer technology to assist individuals with autism. In 1985, the Picture Communication System, also known as PECS, was developed for children who had limited abilities to express themselves verbally. The idea was that by pointing to a picture, the child could communicate what he/she wanted. PECS has been modernized with the development of Apps for the iPad. Now, a child can choose from a wide variety of communication choices simply by touching a screen that will facilitate the process and provide a wide variety of choices never before available. This chapter helps parents and teachers to understand how information and computer technology improves communication for children with autism. In addition, the use of iPad and how it improves communication for children with autism are discussed. The use of iPads by children with autism was chosen because of the interactivity they offer to this population as well as for the range of educational opportunities they provide.

INTRODUCTION

This chapter focuses on how people with autism benefit from information and computer technology. While autism is said to confine people afflicted by it to problems in social interaction, communication, and cognitive and motor difficulties, modern computer technology has become a valued asset that can assist them to live productive

lives. Simpson (2005) reported that fifty percent of children with autism will not develop functional speech, instead they may either have no speech or they may use echolalia, often in what appears to be nonsensical forms.

Porter and Cafiero (2009) stated that individuals with autism spectrum disorders (ASD) are severely challenged by their difficulties with language and communication. According to these

authors language and communication are the core challenges faced by individuals with autism spectrum disorder (ASD).

Thus, information and computer technology becomes necessary for this population. Ganz, Hong, and Goodwyn (2013), reported that currently, handheld devices, including tablet computers, smart phones, and personal digital assistants, are gaining popularity in U.S. society, and researchers are beginning to investigate their effects as AAC systems for individuals with ASD on improving their academic, social, behavior, and communication skills.

AUTISM SPECTRUM DISORDERS DEFINED

Autism is defined by Putman and Chong (2008) as a pervasive developmental disorder diagnosed by the age of three. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR), the disorder is characterized by qualitative impairment in social interaction, qualitative impairment in communication and restricted, repetitive and stereotypic patterns of behavior, interest and activities. Ennis-Cole and Smith (2011) stated that within the Autism Spectrum, several classifications of disorders exist: Rett's Disorder, Asperger's Disorder, Pervasive Developmental Delay Not Otherwise Specified (PDD-NOS), Autistic Disorder, and Disintegrative Disorder. According to these authors each of these has its own particular attributes, though there are common denominators such as deficits in communications skills, deficits in social skills, and restrictive and/or repetitive behaviors.

Prevalence

The National Institute of Mental Health (2010) reported that 3.4 of every 1, 000 children 3-10

years old had autism. The effects of autism vary from child to child. Autism Spectrum Disorders affect 1 in 88 children, with a higher prevalence in boys (1 in 54), than girls (1 in 252) (The Center for Disease Control and Prevention as cited in Rigo (2013). According to Holstein (2013) even more alarming is the rate at which the disease is becoming more prevalent. It is reported that there are more than 1.5 million Americans presently diagnosed with autism (Holstein, 2013).

The degrees of severity vary from person to person. Bryant and Kratz (2012) stated that 70% of individuals with autism have impaired intellectual abilities while the other 30% fall within the normal range of intellectual ability.

Characteristics of ASD

It is well documented that the population of individuals with ASD is heterogeneous (Ennis-Cole, Smith 2011). According to these authors, individuals in the spectrum vary in their intellect, functional ability, preferences, language ability, motor skills, and cognitive ability. The degree of severity also varies from person to person. Some individuals are nonverbal with severe cognitive deficits while others have normal or average intelligence. Ennis-Cole and Smith (2011) described some individuals in the spectrum as possessing skills that make them a genius in a narrowly defined area, which relies on memorization, pattern recognition, computation, musical, or artistic talent.

Autism is characterized by impaired language function, idiosyncratic speech, and an inability to maintain conversations coupled with cognitive and motor difficulties (Holstein, 2013). The following possible indicators of ASD were cited on the report by the National Institute of Mental Health:

- Does not bubble, point, or make meaningful gestures by 1 year of age;
- Does not speak one word by 16 months;

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