

# Chapter 79

## Addressing Executive Function Using Assistive Technology to Increase Access to the 21<sup>st</sup> Century Skills

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### ABSTRACT

*Access to the common core and the general education environment are attainable goals for learners on the autism spectrum when their autism is clearly understood and meaningful supports and instruction are in place. This chapter focuses on one area that is often not addressed for students with Autism Spectrum Disorders (ASD) yet is critical to academic success: executive function. Specifically, this chapter overviews the executive function challenges related to ASD and technology supports in the executive functions areas of (a) information management, (b) materials management, (c) time management, and (d) self-management.*

### INTRODUCTION

The outcomes of adults with autism in terms of independent living, developing and maintaining meaningful relationships, and employment have generally been consistent since the 1960s (Henninger & Taylor, 2012). That is, sadly, the majority do not achieve a high quality of life – a finding that has been validated by self-reports of individuals with high-functioning autism spectrum disorders (HFASD) (Müller, Schuler, & Yates, 2008) as well as results of the National Longitudinal Transition Study (NLTS2) (Shattuck et al., 2012).

How can this dismal trajectory be changed? Learner outcomes will improve when they are taught meaningful skills. The 21<sup>st</sup> Century Student Outcomes and Support Systems (Partnership for 21<sup>st</sup> Cen-

DOI: 10.4018/978-1-5225-0034-6.ch079

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tury Skills, n.d.) have formally recognized that life success goes beyond academics by incorporating a focus on (a) Life and Career Skills; (b) Learning and Innovation Skills; and (c) Information, Media, and Technology Skills (see Table 1 for a brief description of these areas). In addition, it is important match the skills that need to be taught to evidence-based practices (EBP) – strategies that have been shown to be effective for learners on the spectrum (Centers for Medicare and Medicaid Services [CMS], 2010; National Autism Center [NAC], 2009; National Professional Development Center on ASD [NPDC], 2009) (see overview in Table 2).

While these competencies encompass numerous skills areas, many are related to a core challenge in autism spectrum disorders (ASD): executive function (EF). For the purposes of this chapter, EF skills are defined as those that allow us to (a) manage, organize, and process relevant information while screening out irrelevant stimuli; (b) manage the environment, including materials and space; (c) manage time; and (d) manage self, including regulating our behavior and emotions.

EF skills pose lifelong challenges for individuals with ASD; indeed, rather than decreasing, they increase with age (Rosenthal et al., 2013). That is, it is expected that all individuals, not just those with autism will assume responsibility for organizing themselves, their environment, time, and regulating their own behavior. As a result, when learners on the spectrum do not exhibit these skills, it does not mean that their behavior is willful. Rather, their lack of competence in this area reflects the failure of those who support them to provide appropriate instruction and/or supports in the aforementioned areas. That is, these skills are often assumed to be in place instead of directly taught and supported.

Table 1. 21<sup>st</sup> century student outcomes

Outcomes	Skill Areas
Core Subjects and 21 <sup>st</sup> Century Themes	English, reading or language arts World languages Arts Mathematics Economics Geography History, government, and civics Global awareness Financial, economic, business, and entrepreneurial literacy Civic literacy Health literacy Environmental literacy
Life and Career Skills	Flexibility and adaptability Initiative and self-direction Social and cross-cultural skills Productivity and accountability Leadership and responsibility
Learning and Innovation Skills	Critical thinking Communication Collaboration Creativity
Information, Media and Technology Skills	Information literacy Media literacy Information, communications, and technology

Note. Partnership for 21<sup>st</sup> Century Skills (n.d.).

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