

Chapter 103

Text-to-Speech Software as Assistive and Mainstream Technology: Transitioning from a Functional to a Socio-Constructivist Approach

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ABSTRACT

This chapter presents the case for mainstreaming text-to-speech software for students with reading difficulties in the educational environment through a socio-constructivist approach. Socio-constructivism guides this chapter and communicates its purpose. The argument presented is that a purely functional approach that serves only students with reading disabilities such as dyslexia, confines the delivery of text-to-speech software to a select population, which results in limited outreach and use. Further, despite increased consumer involvement in assistive technology delivery with its potential to increase student participation, the target population is defined by professionals and based on human function rather than determined by a self-assessment of individual need, and may be further negatively impacted by human, contextual, and technological factors. By transitioning to a socio-constructivist approach, there is greater potential to assist a larger number of students who may otherwise not have the opportunity to explore text-to-speech software's potential and throughout their educational career may continue to experience difficulties in reading.

INTRODUCTION

Although many students are motivated and intrinsically interested in their studies, those experiencing reading difficulties may find studies challenging and frustrating. For these students, such reading difficulties continue throughout their academic careers. Without an effective support system in place, and the awareness of specific accommodations that can support them, students who struggle with reading

DOI: 10.4018/978-1-5225-0034-6.ch103

may be at risk of underachieving, or worse yet, dropping out of school altogether. Accommodations designed to support these students do not need to be costly, but should be readily available for students to explore and use. Text-to-speech software for example, represents a viable and cost effective opportunity to improve and remediate for deficits in reading among students and should be an option for a larger number of students to potentially benefit from its use.

Commonly viewed as an assistive technology (AT), text-to-speech software is now supported by a growing research body for its use with those with low levels of literacy and English as second language (ESL) learners. Traditionally speaking, AT recommendations have been made by determining the functional limitation of a disability and how it hinders the individual's performance within a defined setting. Through a socio-constructivist approach, text-to-speech's potential to capture a wider audience of students who struggle to read will occur, with a greater number of students having the opportunity to experience its research-based benefits in meeting their study needs and achieving their reading goals.

The Purpose of this Chapter

This chapter presents the case for transitioning from a functional to a socio-constructivist approach for the delivery of text-to-speech software. It is argued that a functional approach to delivering text-to-speech software as AT limits its outreach and use. This is in contrast to a socio-constructivist model, which has great potential to extend it. First, the benefits of text-to-speech software are discussed in the context of language literacy with regard to students with learning disabilities, ESL learners with low literacy levels, non-English speaking students with diverse language learning needs, and international students who lack the needed academic reading skills to attend postsecondary institutions. The challenges in applying the use of the functional approach are then discussed to include the myriad of factors that should be taken into consideration, that are not only complex in and of themselves, but are typically intertwined with one another. The benefits of taking a socio-constructivist approach to text-to-speech software delivery are then argued to increase outreach, and hence, increase the potential of text-to-speech software in serving a larger student population for whom there is a "good fit."

To support the argument of the delivery of text-to-speech software using a socio-constructivist approach in favor of making recommendations based on functional limitations, this chapter draws upon a multi-disciplinary research base focused on learning environments, education and technology, learning disabilities, ESL, literacy, occupational therapy, dyslexia, and special education.

LANGUAGE LITERACY AND THE BENEFITS OF TEXT-TO-SPEECH SOFTWARE

Students with Learning Disabilities

Text-to-speech software has historically been used to support students with specific reading disabilities (Balajthy, 2005; Kanitkar, Ochoa, & Handel, n.d.). The text-to-speech software features combined with electronic study tools have been found to motivate students to read and comprehend, while improving their overall study skills (Shaw, Madaus, & Dukes, 2010). A number of studies (e.g., Brinckerhoff & Banerjee, 2011; Elkind, 1998; Elkind, Black, & Murray, 1996; Elkind, Cohen, & Murray, 1993) have shown that text-to-speech software can motivate and assist students with specific reading disabilities in both reading and comprehension, while at the same time, also improving their study skills.

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