

Chapter 14

Mobile Apps, Universal Design, and Accessibility in Schools: Creating an Inclusive Classroom Experience

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ABSTRACT

This chapter focuses on how mobile applications may be used to enhance accessibility for individuals with disabilities in the educational setting as well as to encourage the development of apps that embrace universal design principles. Smartphones and tablets, often by default, provide alternative accessible features addressing the needs of individuals with visual, auditory and/or physical disabilities. As schools make the leap into the mobile age it is imperative to explore mobile applications developed with the universal design learning framework in mind and intent to provide equal access in learning environments. Increased use of mobile apps in the classroom goes hand in hand with the growing popularity of these tools in everyday life outside of the school context, and this chapter is a call for greater engagement with mobile applications that have been designed to be accessible for individuals with disabilities, and to promote a more collaborative and equitable learning environment.

INTRODUCTION

Since the introduction of mobile applications for Apple Inc.'s iPhone in 2007 (Strain, 2015), their use has diffused into various sectors of society including in classrooms and institutions of learning. Prensky (2007) refers to the youth of today, whose lives are inevitably intertwined with the use of the Internet and social media, as 'digital natives' while Gardner and Davis (2013) dub these youth as the 'app generation.' Acknowledging the popular use of mobile apps among the student population Antonucci (2014)

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cites several reasons why such technologies should continue to be promoted in classrooms for purposes including: providing alternative texts in e-book format, the retrieval of supplemental learning resources, and to assist with fieldwork or research. Within classrooms teachers of primary, secondary and college-level students have used mobile phones and apps in various creative ways ranging from the design of assignments incorporating QR codes for additional information on a subject to the production of videos or podcasts, as well as a medium for crowdsourcing and sharing learning materials (Onlineuniversities.com, 2012).

Teachers, like their student population, have increasingly embraced the utilization of mobile technologies in classrooms. A survey of pre-service teachers by O'Bannon and Thomas (2015) has shown that while 25% of pre-service teachers supported the use of mobile phones in the classroom in 2013 that number had increased to almost 50% by 2015. O'Bannon and Thomas (2015) further note that as use of mobile phones in the classroom increased so too did teachers' perceptions of its potential benefits for schoolwork.

Despite the obvious enthusiasm among both teachers and students to integrate mobile phone and apps into the classroom experience, teachers express apprehension about cyber-bullying, cheating, and disruptive behaviors including texting that impede student engagement and performance (O'Bannon & Thomas, 2015). As a result a majority of secondary schools across the nation have continued to prohibit the use of mobile phones in their classrooms (O'Bannon & Thomas, 2015). Contrary to this trend, in March 2015 the Department of Education in New York City ceased its ban of mobile phones in classrooms that had affected approximately 1.1 million students (NY Daily News, 2015).

More importantly, a significant barrier to using mobile phones for instruction in classrooms includes an app's lack of accessibility or universal design, which in turn affects the equal participation of students with disabilities. This chapter focuses on the issue of mobile app accessibility and the inclusion of the needs of individuals with disabilities in the formal learning setting. In addition to featuring existing examples of accessible mobile technologies used by students with disabilities, this chapter delves deeper to inquire about the overall design of mobile apps in use in classrooms today. Are these mobile apps being developed with the principles of universal design in mind? Are we as educators shifting our attitudes from using assistive technology to advocating instead for accessible mobiles that help foster inclusive classroom environments?

This chapter provides an overview of U.S. disability laws that govern equal access to instructional tools and technology including electronic information and use of mobiles, relevant qualities of universal design, and the synergy between the use of accessible mobile apps and the enhanced classroom experience.

BACKGROUND: DISABILITY LAW OVERVIEW AND ASSISTIVE TECHNOLOGY

According to the World Health Organization (2011) approximately 15% of the global population was living with a disability in 2010. The World Health Survey likewise reported that 15.6% of individuals aged 15 and older were considered disabled. In the United States the Centers for Disease Control and Prevention reported in 2015 that an estimated 22% of adults nationwide were individuals with disabilities (Courtney-Long et al., 2015). Individuals with disabilities often face barriers in various sectors of society, which impede equal access to services. The World Health Organization (2011) describes the nature and types of barriers including factors such as inadequate regulations and standards; discrimination and

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