Chapter 13
Mobile Tablet Integration Using Augmented Reality

Regina Malz
Independent Researcher, USA

ABSTRACT

The purpose of this chapter is to help educators successfully integrate mobile tablets in their classrooms. Research has shown that mobile tablet integration can increase learning of students. Integrating advanced technologies in classrooms will support learners and advance all students' learning experiences in ways that cannot be done without mobile tablets. This chapter provides educators with transformative tools to improve their in-person lessons and their lessons through augmented reality. This chapter also includes a set of resources educators can use to obtain augmented reality apps that will enhance their lessons, a list of ways to improve their curriculum, and how to engage students via virtual reality when home learning is necessary.

INTRODUCTION

There has been a rapid integration of new technologies into U.S. classrooms. According to Education Market Research, there are approximately 13.2 million computing devices in K-12 U.S. schools (Perez-Sanagustin et al., 2017). This 13.2 million includes 4.7 million desktop computers, 3.9 million laptop computers, and 2.3 million mobile tablets. Project Tomorrow's report stated that one-third of U.S. public school students used mobile devices for schoolwork in 2014 (Nagel, 2016). Mobile tablet purchases by schools increased by 8.6% during the 2014-2015 school year (Perez-Sanagustin et al., 2017). According to a study by Futuresource Consulting Ltd, half of all U.S. public school students during the 2015-2016 school year had the opportunity to work one-on-one with mobile devices during the day (Bonninger, et al., 2017).

Additionally, there is an increasing number of students who have special needs. During the 1990-1991 school year, 4.7 million students received special education services. In other words, 11% of all public-school students between the ages of three to 21 years old (National Center for Education Statistics, 2015). During the 2012-2013 school year, 6.4 million students received special education services, which

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amounted to about 13% of all public-school students between the ages of three to 21 years old (National Center for Education Statistics, 2015).

The productive integration of new technologies depends on understanding multiple issues of reform, such as aspects of teacher professional development and the real-world practical act of using the technology in the classrooms to support diverse learners. The purpose of this chapter is to provide educators with the tools necessary to implement mobile tablets successfully. The purpose of this chapter is to identify how to use mobile tablets and augmented reality (AR) apps to enhance lessons in ways that would not be possible without mobile tablets. This chapter also includes a list of augmented AR apps that can be used to supplement student learning objectives.

BACKGROUND

Educational technology is defined as a component used to help teach students in a way that could not be done without that specific technology. Technology integration is defined as the act of incorporating technology into the classroom to help the students learn in a way that could not be done without that technology (Aziz et al., 2010). The focus of this chapter is the integration of AR apps with mobile devices. Students who are learning from home can benefit from lessons on mobile tablets because it allows them to participate in hands-on lessons that engage all learning styles.

Studies by Eichenlaub et al. (2011), McKenna et al. (2015), Musti-Rao et al. (2015), and Lowman and Dressler (2016) showed that mobile tablets helped students to reach achievement levels that they were unable to achieve without the mobile tablets. Studies have shown that mobile tablet apps could support learning (Carr, 2012; Chen, 2013; Eichenlaub et al., 2011; Lowman & Dressler, 2016; Riley, 2013; Shih-Hwa & Gwo-Guang, 2013).

Soykan and Ozdamli (2016) conducted a quantitative study, which showed that teachers' integrating mobile learning apps increased test scores. During the study, mobile tablets were integrated for 10 weeks. Teachers created lessons that were carried out digitally and students participated in projects using mobile tablets. The study showed an increase in the students' success using mobile tablets.

Mobile tablets, such as the iPad, have a touch-screen interface that allows students who lack hand-eye coordination to practice their letters independently (Flewitt et al., 2014). The research showed that students could use the iPads to communicate ideas in a variety of ways that were not possible without the iPads. For example, a student who cannot generate words and write them on a piece of paper to create a story could use the iPad to draw, take pictures, and record verbal descriptions to create a story (Flewitt et al., 2014, p. 110).

In the special education classroom, the number one goal is always to lessen the achievement gap between students without disabilities and those with disabilities (U.S. Department of Education, 2004). Integrating new technologies has the potential to close that gap for special education students if teachers can integrate these new technologies to their potential (Spaulding, 2014). Students with special needs require a different type of teaching and learning to reach their potential. When these students' learning needs cannot be met in a regular education classroom, they need modifications to their environment and teaching to succeed. A study by Malz (2019) found that understanding that how teachers are integrating mobile tablets with AR apps can support the learning of students with disabilities. This real-world perspective may provide new understandings of practical implications of using new technologies to support special needs learners.