

# Chapter 93

## The Benefits and Challenges of Mobile and Ubiquitous Technology in Education

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### ABSTRACT

*Technology has evolved and continues to evolve at a rapid pace, allowing access to learning wherever and whenever students need, creating a ubiquitous learning environment. This rapid evolution of technology will require preparation of students for the 21st century, including post-secondary students, necessitating a fundamental and systematic change in how schools are organized for ubiquitous learning. For mobile learning technologies to truly facilitate student learning and prepare students for learning beyond the 21st century, a paradigm shift in teaching and learning is needed. Ubiquitous computing environments should be viewed through the lens of the learner and the learning environment in which all students have access to mobile learning devices anytime, anywhere, thus transcending the boundaries of the classroom. Integration of m-learning and ubiquitous technology in the K-20 classroom will require a new pedagogical framework for teaching and learning. At the heart of this framework is the classroom teacher: a teacher who is aware of the benefits and challenges of technology in education. This chapter explores the benefits and challenges of this technology in education.*

### INTRODUCTION

In this chapter, the authors outline and discuss the benefits and challenges of ubiquitous learning and the need for a comprehensive and seamless integration of technology in the classroom. The

purpose of this chapter is to share lessons learned from implementation of mobile technologies in K-20 classrooms. The researchers will share personal insights and will offer suggestions on how to effectively integrate mobile and ubiquitous technologies in K-20 classroom settings for

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academic purposes. Last, the authors will discuss tensions and alignments associated with mobile learning and ubiquitous technologies to support the student and teacher needs.

## **BACKGROUND**

### **Ubiquitous Technology**

Ubiquitous technology started 60 years ago when classrooms were equipped with handheld response systems to provide discussion in large classrooms or lecture halls (Sharples & Roschelle, 2010). Technology has evolved and continues to evolve at a rapid pace allowing access to learning wherever and whenever students need using mobile devices (van 't Hooft, Swan, Lin, & Cook, 2007). Sharples and Roschelle (2010) view mobile learning to be the study of effectively harnessing personal and portable technologies. Their research also focused on the need for technology-enabled learning to take place across content areas. The Common Core State Standards (CCSS) view media and technology as an integral part of college and career readiness starting in kindergarten and all the way through 12<sup>th</sup> grade (NGA & CCSO, 2010). The CCSS expect college and career ready students to “use technology and digital media strategically and capably” (www.corestandards.org). In a recent survey (Moeller & Reitzes, 2011) of over 1,000 high school teachers, students, and instructional technology (IT) staff, 43 percent of the students surveyed felt unprepared to use technology. According to these survey results, only eight percent of the teachers felt they fully integrated technology in their classrooms. Yet, the CCSS require students to have equitable access to the knowledge and skills necessary for college and career readiness in the 21<sup>st</sup> century.

Current research (Moeller & Reitzes, 2011) shows that technology is often not aligned with the school district's vision, mission statement,

or curriculum. Using technology ubiquitously to support student-centered learning requires vision, leadership, and a common set of learning goals that connects the student to real world learning. Radical changes to the educational structure are needed to move education into the 21<sup>st</sup> century and beyond (November, 2013). Many current instructional practices have not changed; teachers are often still teaching using the same techniques and strategies of their past teachers. Twenty-first century learning is personalized, problem-based, authentic, collaborative, and student-centered. In a recent study (Cardullo, 2013) the classroom teacher said that because of the integration of technology in his classroom, he was teaching differently. When the researcher asked him to explain, he said:

*Typically, I would stand in front of the class and deliver information. However, with the iPads I can't. I...feel like I have become more of a facilitator and I often find myself teaching from the back of the classroom. Students are no longer bound to their seats; look at where they are sitting to learn. Some are on the floor in a group and others are clustered together at a group of desks, and yet a few are still working alone. The differentiation of learning is amazing (T. Hank, personal communication, March 20, 2013).*

There is a growing urgency among education reformers for change. Preparation of students, including post-secondary students for the 21<sup>st</sup> century, will require a fundamental and systematic change in how schools are organized (Carnegie Corporation of New York & Institute for Advanced Study, 2009). Exemplar programs are starting to get recognition for their preliminary research. Schools such as, Dr. Abraham Cano Freshman Academy in Harlingen, Texas have developed learning spaces to meet the demands of the 21<sup>st</sup> century. The school offers innovative technology, flexible learning, advanced design that promotes

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