

The Use of Mobile Phones in K–12 Education

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INTRODUCTION

The processes involved in student learning are now as never before. Delivery of information is more various, instantaneous, and itinerant and thus new ways of information delivery and instruction are necessary to meet the needs of this new learner. One method of meeting these needs is by using *mobile technologies*. Mobile technologies are digital devices that include tablets, personal digital devices, media players, and mobile phones. The use of mobile technology in the classroom is commonly referred to as *mobile learning*. Although mobile learning can incorporate various types of mobile technology, this chapter will focus on only one type of mobile technology – the mobile phone – as a way to engage students, enhance instruction, and support students with disabilities.

Today's mobile phones are more than a device for communication - they have become pocket-sized computers. For this reason mobile phones have become a ubiquitous technology; in fact, 88% of adults (Zickuhr, 2011) and 77% of teens (Lenhart, 2012) own a mobile phone. Although mobile phones are so widely used in society, a majority (69%) of classrooms have banned the use of mobile phones (Common Sense Media, 2009). Frequent misuse for purposes of classroom disruption, cheating, and access to inappropriate content are contributing factors to schools' decision to ban mobile phones (O'Bannon & Thomas, 2014; Thomas & O'Bannon, 2013;

Thomas, O'Bannon, & Bolton, 2013). Despite these barriers, the functionality and prevalence of mobile phones have caused many educators and educational stakeholders to rethink current policies and to investigate mobile phones as viable educational tools (Thomas, O'Bannon, & Bolton, 2013). Moreover, researchers have shown increases in student motivation (Brown, 2008), and active participation (Kinsella, 2009) when mobile phones are used in the classroom. Given the promise of mobile devices as instructional tools in K-12 education, it is important to discuss (a) pioneering work that has led to the use of mobile technologies, (b) the perceptions of using mobile phones, (c) how mobile phones are being used, and (d) future research directions.

PIONEERING SCHOLARS

Marc Prensky, Mark van 't Hooft, and Liz Kolb were among the first educational researchers to advocate for the use of technology to meet the needs of the new learner in K-12 classrooms. While these researchers focus on different aspects of technology integration, collectively they account for important conceptual and empirical contributions that led to the acceptance of mobile phones as instructional tools.

Marc Prensky is credited for coining the terms *digital natives* and *digital immigrants*. According to Prensky (2001), digital natives are of the

generation born after 1980, whereas digital immigrants are of the generation born before 1980. Digital immigrants have to learn to adapt their environment and work at integrating technology into their daily lives. On the other hand, Digital natives are characterized as immersed in technology such as computers, videogames, digital music players, and mobile phones, and can seamlessly integrate technology into every aspect of their lives. Prensky posits that as a result of being exposed to a technologically rich environment and the sheer volume of students' interaction with it, today's students think and process information fundamentally different from digital immigrants. Thus, to stay engaged during learning activities digital natives have come to expect the same level of technology integration in the classroom as in their personal (Martin, & Ertzberger, 2013).

Mark van 't Hooft has been active in the area of mobile learning since 2001, beginning with the Palm Education Pioneer (PEP) Project - the first large-scale evaluation of handheld mobile technology for education. Through the PEP Project, 175 K-12 classrooms throughout the United States were provided sets of handheld computers. An overwhelming majority (90%) of teachers who participated in the PEP Project indicated handheld computers are effective instructional tools that have the potential to have a positive impact on students' learning, and that they would continue to use handhelds in the future. In a later study, Swan, van 't Hooft, and Kratcoski (2005) examined students' use of mobile technologies and the effects on their motivation to learn and engagement in learning activities, as well as their teachers' support for the learning process. Their findings suggest that use of the mobile technologies resulted in increased student motivation, engagement, productivity, and quality of work. Teacher interviews also indicated using mobile technologies enhanced the learning process, especially in the area of writing. Moreover, several teachers noted improvements in the writing of students with disabilities and commented on

the benefit of mobile technologies for lessening the performance gap between students with and without disabilities.

Liz Kolb's work explores methods teachers and students can use that incorporate "everyday technologies" to which students have become accustomed in the classroom. Specifically, Kolb investigates the integration of mobile phones into classroom instruction as a way to better connect how students use technology in everyday communication and the way they use technology in the classroom (Kolb, 2008). Mobile phones can be used, for example, to increase engagement, enhance instruction, and extend learning beyond the typical school day. In this area, Kolb has published two books on how teachers can use mobile phones in the classroom for authentic purposes. Her first book, *Toys to Tools: Using Student Cell Phones in Education* (2008), explored ideas for authentic lessons, solutions for common concerns, and research to support the use of mobile phones in education. The purpose of her newest book, *Cell Phones in the Classroom: A Practical Guide for Educators* (2011), is to "illustrate many practical ways to use cell phones in learning: classroom groups, individual projects, homework outside of the classroom, field trips, and as communication tools for teachers, students, and parents" (p. 1). In this book, Kolb use 16 case studies to demonstrate how teachers use mobile phones in education and illuminate their experiences and activities. In addition to her books, Kolb also maintains a website (www.cellphonesinlearning.blogspot.com) with a host of resources including lesson plans that use student mobile phones and information about mobile safety education.

The work of Prensky, van 't Hooft, and Kolb has significantly influenced research in the area of technology and its application in educational settings. Together, they have identified the new learner, examined the use of emerging technologies as instructional tools, and provided practical classroom applications for educators. They have also encouraged schools to keep up with the ad-

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