Teaching with Smartphones in the Higher Education Classroom

AYME 2015

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Abstract:

Smartphones have become an integral part of how college students communicate and interact with the world. Yet in many college classrooms, students are discouraged from using smartphones. However, the increased ubiquity of smartphones on college campuses offers an opportunity for educators to provide an experience that is relevant and engaging. Research suggests that using smartphones offers more educational potential than simply accessing resources. This paper presents research on teaching with smartphones and the benefits and challenges of teaching with smartphones in higher education.

The world has gone mobile. Ninety percent of American adults own a mobile phone and seventy-five percent of all mobile phones in the U.S. are smartphones (ComScore, 2015; Pew Research, 2014). Smartphones have become an integral part of how today's college students interact with the world and communicate with others (Lella, et al., 2015). These devices have become a universal tool that fits in your pocket. It is a phone, watch, camera, phonebook, calendar, flashlight, compass, pedometer, notebook, calculator, media player, and more. In fact, Millennials now access more online content on their smartphone than desktop computers (Lella, et al., 2015). Furthermore, the majority of digital media consumption now takes place on smartphone apps (ComScore, 2014).

Today's students are fundamentally different than their predecessors. Prensky (2001) has dubbed millennials "digital natives." Unlike previous generations who learned technology later in life, today's college students are among the first generation to grow up using digital technology (Tapscot, 1999; Tapscot, 2009; Trilling & Fadel, 2009). Not only are they digital natives, today's college students are "mobile natives." They have grown up using devices with touch screens, accelerometers, cameras, speech recognition, and GPS (Yu, 2012; Brown et al., 2011).

As a result, smartphones are becoming increasingly ubiquitous in the college classroom. However, there exists a digital disconnect between how students use technology for everyday communication and how they learn and communicate in a college classroom (Project Tomorrow, 2011; Kolb, 2008). Educators around the world are asking – why should it be this way?

From the beginning of the smartphone revolution, educational researchers focused on providing quantitative and qualitative research demonstrating the viability of smartphones as useful tools in education. The use of smartphones in the classroom offers educators an

opportunity to provide a relevant and engaging experience. While technology in the classroom is not new, portable technology that students bring into the classroom themselves is a recent development.

Mobile Learning Research

Educators researching the use of smartphones in the classroom are pioneers in a new field of study known as mobile learning (m-learning). Mobile learning can be defined as anytime, anywhere learning using a portable internet-enabled device (McQuiggan, et al., 2015; Attewell & Savil-Smith, 2005). It is not within the parameters of this paper to provide a detailed account of m-learning. However, a brief overview of mobile learning research will provide the context for teaching with smartphones. McQuiggan, et al., along with several other publications provide general explanations and analysis of m-learning research (McQuiggan, et al., 2015; Park, 2011; Traxler, 2009; Sharples, et al., 2007; Naismith, et al., 2004)

Portability is the most distinctive feature that distinguishes mobile learning from other uses of technology. M-learning can be both formal and informal. In mobile learning, students access course content when and where they want. Elements of m-learning have been used in online courses, the flipped classroom model, and as a supplement to traditional instruction.

One of the main tenets of m-learning is "anytime, anywhere learning." As a result, learning takes place both in and out of the classroom. However, the remainder of this paper focuses on the benefits and challenges of teaching with smartphones in a classroom environment.

Summary of Benefits

A review of the literature reveals seven key benefits of teaching with smartphones in higher education. First, most studies note the learner-centric nature of smartphone use in the classroom (McQuiggan et al., 2015; Kearney et al., 2012; Yu, 2012; Nielsen & Webb, 2011;

Park, 2011; Sharples et al., 2007). Learner-centric education places the emphasis on individuals in the classroom. The focus is on student learning rather than knowledge transmission by a professor. Smartphones aid students in learner-centric exercises. Research indicates that familiarity and device ownership are keys to student involvement in the mobile learning process (McQuiggan, et al. 2015; Pea & Maldonado, 2006). Instead of the focus being on a whiteboard or projector screen, the focus is on a personal device. The personal nature of smartphones means that learning on the device becomes learner-centric.

Studies indicate that teaching with smartphones can lead to greater collaboration among students (Kearney et al., 2012; Yu, 2012; Naismith et al., 2004). Building on Vygotsky's social development theory, mobile learning studies indicate that social interaction contributes to understanding (Brouns, 2015; Laurillard, 2007; Sharples, et al., 2007). Classroom activities that involve social media apps on smartphones allow for student collaboration (Gikas & Grant, 2013). For example, student collaboration was seen in class discussions via the mobile app for Twitter (Arrastia, 2015; Gikas & Grant, 2013; Veletsianos, 2011; Junco, et al., 2010; Hrastinski, 2008). Classroom uses for Twitter include discussion prompts, student response, professor/student communication, and resource sharing.

Motivating students to learn is another benefit of smartphones in the classroom. For example, several studies used the text-messaging website Poll Everywhere (polleverywhere.com) to engage students and stimulate learning (Warnich & Gordon, 2015; Shon & Smith, 2011; Nielsen & Webb, 2011; Thomas & Orthober, 2011). Students report that the anonymity of text-messaging motivates them toward greater participation in learning activities and further opportunities to collaborate with others.

Studies indicate that smartphones can be valuable tools to support alternative learning environments such as a "flipped classroom" (McQuiggan, et al., 2015). In a flipped classroom, lecture and formal instruction take place outside the classroom via video instruction. For example, prior to in-class discussion, students can view YouTube videos created by a professor. In some instances, video instruction can be viewed on smartphones in the classroom. This allows the student to control the pace of viewing the content.

Student creation of content is a key factor in a social constructivist framework. Several studies featured content creation activities in class and out of class. (Allen & Nelson, 2013; Kearney et al., 2012; Cochrane & Bateman, 2010). For example, students used their smartphones to take photos, record audio and video, create images, post on social media, and send text-message responses.

Smartphones also provide the opportunity for quick assessment of student learning. For example, the online resource Kahoot! (getkahoot.com) enables professors to create a game-based exercise in which students use their smartphones to answer multiple-choice questions. Students have a limited time to respond to questions and are awarded higher points for answering quickly. Studies indicate high student satisfaction with the game-like activity while also finding some student annoyance at delays in gameplay with some smartphones (Ho, 2015; Hussein, 2015; Sunde & Underdal, 2014).

While many universities require official communication between professors and students to take place via a Learning Management Systems (LMS), some professors find it beneficial to maintain an additional means of communicating with students. The use of smartphones can increase communication between a professor and student. For example, the use of the online

resource Remind (remind.com) enables users to create text-message reminders for students. The Remind app is one of the most downloaded smartphone applications for teachers (Stone, 2014).

Benefits
• Learner-centric
• Collaborative interactions
• Motivates students to learn
• Supports alternative learning environments
• Enables content creation
• Provides assessment opportunities
• Increases teacher/student communication

Figure 1: Benefits of teaching with smartphones in the classroom

Summary of Challenges

Students and professors acknowledge the potential for distraction with smartphone use in the classroom (Gikas & Grant, 2013; Yu, 2012). College students admit to using other apps in class when the focus should be on a specific task (McQuiggan, et al., 2015; Gikas & Grant, 2013). For example, students accessed social media apps such as Twitter, Instagram, and Snapchat. However, students in several studies noted that although it was easy to be distracted, it was also just as easy to return to the task at hand (Gikas & Grant, 2013).

Research indicates that the relatively small screen size of smartphones can be a hindrance to prolonged use in the classroom. Smartphones have small keyboards and typing can be

laborious (McQuiggan et al., 2015; Gikas & Grant, 2013; Yu, 2012; Hashemi et al., 2011). Viewing the text of an instructional video on a smartphone can prove difficult as well.

The cost of and access to devices pose another challenge to smartphone use. Although smartphone use is high among Millennials, not everyone can afford one. Even among smartphone users, device differentiation can be an issue. Some smartphone apps are made specifically for either Apple or Android devices and are not compatible with one another.

Perhaps the greatest challenges to teaching with smartphones are the prevailing attitudes and prejudices of educators and students. Many professors have classroom rules prohibiting the use of smartphones. As noted above, some view these devices as distractions, while others are concerned with the possibility of cheating. As a result, it is difficult for some professors to overcome these prevailing attitudes and see the potential value of smartphones as useful tools in the classroom. Not only do some professors resist teaching with smartphones, some students do as well. Studies indicate that although students use smartphones as part of their everyday lives, it does not necessarily mean they want smartphones integrated into their academic lives (Educause, 2012).

Challenges
• Small screen size
• Distraction
• Cost of and access to devices
• Prevailing attitudes and prejudices

Figure 2: Challenges to teaching with smartphones in the classroom

Recommendations for Youth Ministry Education

From reading the literature and from my personal experience in teaching with smartphones, a variety of best practices emerge. First, the use of smartphones in the youth ministry classroom offers a double advantage. Not only will students benefit from an engaging use of technology in the classroom, but students will also be exposed to resources that can be employed in future ministry. As a result, learning activities not only have value in the classroom, but also practical use in ministry.

Second, educators should use smartphones to motivate students to learn. Motivation is based on the intrinsic value of curiosity (Yount, 2004). The goal of motivation is to spark the natural curiosity of students. Professors can use smartphones with text response systems such as Poll Everywhere to initiate discussion. This can provide a spark to prompt interest in a topic. Poll Everywhere provides an instant graphical representation of live poll results that can be shared with the group. These types of services allow for anonymous collection of student opinion without requiring students to publicly respond. As a result, student responses are typically more honest.

Third, educators should use the internet and application features of smartphones in collaborative learning exercises (Nielsen & Webb, 2011). Students can be directed to look up definitions of key terms or to research a topic. In exercises such as these, the smartphone becomes a tool that can lead to group discussion and interaction. For example, students can post on Twitter samples of meaningful course content and other sources related to class discussions. Professors can display Twitter posts in the classroom using an online resource such as Twitterfall (twitterfall.com)

Fourth, professors should use the photo and video capture capabilities of smartphones for debriefing and reporting exercises. Students can be directed to record personal reflections concerning a topic of study. Youth can also be challenged to take photos illustrating a concept such as "grace." These visual exercises can stimulate greater discussion and social interaction.

Fifth, educators should develop guidelines for smartphone use in the classroom. Guidelines to consider establishing include: when smartphone use is acceptable, the difference between appropriate and inappropriate content, and nondisclosure of sensitive information. These devices need not be a distraction. Students can be instructed to use their devices for classroom activities and then put them away once the activity is completed.

Recommendations
• Use smartphones as an engaging technology in the classroom and a resource for ministry
• Use smartphones to motivate students to learn
• Use smartphones as tool for collaborative learning
• Use the multi-media capabilities of smartphones for visual exercises
• Develop guidelines for smartphone use in the classroom

Figure 3: Recommendations for teaching with smartphones in the classroom

Conclusion

Smartphones are here to stay. They are in our classrooms. It is essential that educators continue to explore effective uses of smartphones in the classroom. Christian educators must

seize the opportunity to engage students with this new technology. Using smartphones in the

classroom is an effective way to reach today's mobile natives.

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