



Commentary

Using a health care practice framework to address smartphone use in the classroom

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Abstract

Existing research indicates that off-task smartphone use within classrooms is negatively related to many important academic measures such as attention, comprehension, and grades. However, many educators have begun to advocate smartphone utilization in education, particularly to prepare students for future work environments. There is an increasing use of mobile devices within health care environments and it will be important for pharmacy graduates to possess both technical and socio-technical skills to safely and effectively use digital information. Instructors face the difficult task of controlling digital distractions within the classroom. From a student perspective, it is important that the education environment includes technologies used in practice. Discussing the issues and opportunities of smartphone use within the framework of a health care environment may help guide instructors with regard to their approach to dealing with student smartphone use. This article summarizes existing literature regarding smartphone use in classrooms and provides recommendations to educators for addressing potential problems and opportunities.

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Introduction

Smartphones (e.g., iPhone[®]) are commonly defined as “cellular telephone(s) with built-in applications and internet access.” In addition to digital voice service, modern smartphones provide text messaging, email, web browsing, still and video cameras, MP3 players, and video playback and calling.¹ Smartphone adoption rates have increased dramatically in recent years; as of January 2014, 83% of the 18–29 year old demographic own smartphones.² Texting, accessing the web, and emailing are the most popular non-phone features, used by 81%, 60%, and 52%, respectively, of all cell phone users.³ Smartphone proliferation has been a disruptive force in the communication patterns of today’s

society, and this phenomenon extends to the classroom. While there has been significant concern regarding smartphone distraction in the classroom and related negative effects on learning,^{4,5} educators should also consider potential positive reasons to use these devices within health care education. Other mobile devices, such as laptops and tablets (e.g., iPad[®]) are often included in digital distraction conversations, but phones differ in that they traditionally have not been considered to provide significant educational value. This article examines literature pertaining to smartphone use in higher education and uses a health care environment framework to discuss how educators can approach potential issues and opportunities.

Smartphone use in the classroom

Smartphone utilization is nearing ubiquity among college students. It has been estimated that 90% of American college-age individuals will own a smartphone by 2016.⁶ A

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greater percentage of college students own a smartphone compared to same-aged non-college students.⁷ Regarding in-class usage of phones, a descriptive study of 197 students enrolled in health professions courses at a Midwestern university found that 53.3% ($n = 104$) used text messaging during class time. Approximately 72% ($n = 141$) of students also responded that their phone had rung during class.⁸ In a similar study of undergraduate students ($N = 3866$), 63% reported texting during class.⁹ The 2013 EDUCAUSE Center for Analysis and Research (ECAR) Study of 113,035 undergraduates across 251 institutions revealed that 49% of students wanted professors to integrate the use of phones into class more often, however, 74% of students indicated that usage of those devices are banned or discouraged.¹⁰

The literature is replete with articles advocating restricted smartphone use in health care classroom settings.^{11,12} Various factors may play into instructors' acceptance, attitude toward, and advocacy of smartphone use in the classroom. Results of a mixed-methods study utilizing structured interviews ($N = 18$) and surveys ($N = 213$) of faculty, residents, and students at a Canadian medical institution indicated that younger professors are more tolerant of smartphone access and use in the classroom, as they tend to have "very positive perceptions of mobile phones and regard technology as an important tool."¹³ A 2006 study of 96 students and 80 faculty examined the overall perception of and attitude toward smartphone use in the classroom. Results of the study indicated that the youngest age group, 18–23 year olds ($n = 43$), was more tolerant of smartphones in the classroom as compared to older participants ($p < 0.05$). Furthermore, the younger age group was more accepting ($p < 0.01$) of phones ringing during class and less supportive ($p < 0.01$) of restrictive policies compared to older participants. Age was not a predictor of perceptions of phones as a resource for cheating. Instructors who own and are familiar with smartphones are also more likely to use them to supplement classroom teaching capabilities.⁵ Similarly, professors who are familiar with health care-related applications for smartphones are more likely to utilize and allow their use in classroom and laboratory settings.¹⁴

Issues of smartphone use in the health care classroom

Distraction from learning activities is consistently identified as a major drawback to smartphone use in classrooms.¹⁵ Smartphones provide a propensity for distraction and tempts students to multitask during class with Facebook, Twitter, Instagram, emails, text messages, etc. During class students may also attempt multitasking with smartphones. This leads to cognitive overload, which occurs when mental processing demands exceed the capacity of the cognitive system. The human brain is easily overloaded through additional stimuli and cannot effectively process information from multiple sources simultaneously.¹⁶

Results from one small survey study of 32 undergraduate teaching faculty revealed that 83% of participants perceived smartphone distraction to be a major issue. Those participants estimated that 50% of the students use their phones during class.¹⁵ A similar mixed-methods study was conducted with medical students ($N = 76$), medical residents ($N = 65$), and medical faculty ($N = 41$). Results revealed that 66% of medical students, 50% of medical residents, and 74% of faculty believed that smartphone use in the classroom is a distraction.¹³ In a study of 95 undergraduate students, 92.1% ($N = 87$) indicated that they used phones for non-class activities. To stay connected (69.8%, $n = 64$) and to fight boredom (55%, $n = 50$) were the two primary reasons for using phones while in class.¹⁴ A survey of 269 college undergraduate students from 21 academic majors revealed that 92% ($n = 257$) used their phone to text during class.¹⁷ An experimental study of 47 undergraduate students found that students who use their phones during class lectures tend to take fewer notes ($p < 0.05$), recall less information ($p < 0.05$), and perform worse on respective multiple-choice exams ($p < 0.05$) than students who abstain from using their phones during class.¹⁸ Similarly, results from a study of 3866 undergraduate students indicated that those with more frequent rates of texting and Facebook use during class earned lower semester grade point averages (GPAs) than those who multitasked less ($p < 0.01$).¹⁹ In another study, 238 second year pharmacy students' grades were retrospectively reviewed to determine if electronic device utilization during lecture impacted one's grades. Students who refrained from smartphone use while in an academic setting performed better academically with a mean grade of 88.5% (no smartphone use) vs. 83.3% (smartphone use), $p < 0.05$.²⁰ Although these studies indicate that increased smartphone use is associated with lower academic achievement, there is potential for bias in that students refraining from use could be more intelligent, more disciplined, or possess other characteristics that predict academic success.

While the bulk of research correlates smartphone use with distracted students, results from an experimental study of texting disruption on learning conducted with 185 students across four undergraduate psychology classes revealed a potential complexity. Within this study, participants were organized into three groups: no texting ($n = 44$), moderate texting ($n = 76$), and high texting ($n = 65$). Each class watched a 30-minute video while researchers sent zero, four, or eight text messages throughout to the respective groups. Although the high texting group performed significantly worse ($p < 0.05$) than the other two groups, there was no difference in learning recall between the no texting and moderate texting groups.²¹ These results suggest that there may be a threshold for the number and/or types of distractions before learning is significantly affected. Furthermore, some students are better at focusing attention during class than others. Results from a study of 190 undergraduate students indicate that students who score

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