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Mobile phones in the classroom: Policies and potential pedagogy

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ABSTRACT

Many university instructors (76% of our survey) have a mobile phone policy in their classrooms, due to the distractions of unregulated use. Yet only about half of those who ask students to put down their phones report that these policies are effective. Given that students want to and will use their phones, are instructors taking the opportunity to integrate these mobile devices as a part of media literacy or other pedagogy? We conducted a nationwide survey of more than 150 college instructors to explicate what policies are used, and where they come from; how they are enforced (e.g. rewards and punishments); and for those instructors who use mobile phones in instruction, whether and how the technology is used for academic purposes. Respondents (74%) permit mobile phones for basic classroom activities, but lack true integration with teaching and learning.

Keywords: *mobile phones, cell phones, media literacy, technology policy*.

INTRODUCTION

Mobile phones have not only found their way into the hands of all college students (ages 18-29), but have also found their way into the majority of college classrooms (Kelly, 2017; Pew Research Center, 2018). Shuter et al. (2017) find that American students "use laptops and tablets in class 1–4 times per week and mobile phones 5–10 times per week" (p. 6).

Despite the prevalence and potential of powerful mobile phones, researchers report that these devices can be considered a distraction rather than a learning tool. Finn and Ledbetter (2013) stated: "some college instructors have expressed concern that wireless communication technologies interfere with student learning…and thus they [professors] discourage or limit use in the classroom" (p. 27). In a study by McCoy (2016), 29.5% of respondents report using a digital device during class for *non-class* purposes from 21-60% of the duration of the session. McCoy's (2016) student sample reports the three top disadvantages of digital device use in the classroom as: (a) don't pay attention (89.1%); (b) miss instruction (80.5%); and (c) distract others (38.5%). Kuznekoff et al. (2015) find that students in class who frequently send text messages unrelated to class content are distracted from their learning. Others found that students continue to use their mobile phones in the classroom, particularly in classes with large enrollments, even though there might be policies forbidding it (Grinols & Rajesh, 2014; Olufadi, 2015). Given such claims, it is not surprising that many college instructors unilaterally ban mobile phone use in the classroom.

Researchers have reported the perspective of both instructors and students regarding whether phones should be allowed as well as perceptions about how their presence affects learning. This study reports on three areas that have been understudied: whether and how instructors are incorporating phones into pedagogy, current data about actual policies and how they are enforced, and whether policies are successful. The aim is to help instructors craft useful policies and consider integration of mobile devices into classroom activities.

Literature review

The following section reviews research on mobile phones in college classrooms and resulting research questions. Specifically, it covers the importance of integrating technology with pedagogy, effects of student mobile phone use, and technology policies.

Integrating technology into learning

Higher education demands that instructors integrate technology in their classrooms, yet "we lack models that address how to accomplish this" (Hoffman, 2017, p. 22). Studies (including this one) find that, currently, the majority of instructors ban phones in the classroom "whether due to campus policies, past negative experiences, or lack of knowledge on how to make use of them in pedagogy" (Hoffman, 2017, p.19; O'Bannon & Thomas, 2015; Terras & Ramsay, 2012). Terras and Ramsay (2012) lament that "the rapid pace of technological advancement is currently outstripping the pace of educational applications and evaluations, and in many instances the technological and informational literacy skills of both users and providers," which remains an issue in classrooms today (p. 820).

However, a newer generation of teachers who have been familiar with computers and the Internet from an early age are more supportive of developing pedagogy that integrates mobile devices. O'Bannon and Thomas (2015) studied this generation of K-12 pre-service teachers. In contrast to current educators, 45% supported the use of mobile phones in the classroom (while 25% did not), compared to earlier research that found only one-fourth of the preservice teachers supported their use. More than half of the preservice teachers (58%) indicated that mobile phones support student learning, whereas far fewer (21%) disagreed. Unfortunately, bans on mobile phones are "creating an environment that denies teachers the training, modeling, knowledge, and motivation to recognize the instructional benefits associated with their use" (O'Bannon & Thomas, 2015, p. 111-112).

Harnessing the power of mobile phones in classrooms requires integrating them deliberately into classroom lessons. Very few studies have investigated actual use of mobile devices for academic purposes in higher education (Hoffman, 2017). Although studies find that students use devices in class to read, reference, or search materials, such use is *basic*, "just touching the surface of the capabilities of technology" (Hoffman, 2017, p. 18). Such use could be done with just books and paper; the only advantage to using the device is speed. In other words, instructors use mobile devices as "just another way of doing what they have already been doing" (Hoffman, 2017, p. 41). According to Hoffman (2017), focusing only on the device rather than the pedagogy of its use "has hindered the ability to completely conceptualize the educational capabilities of those powerful mobile devices" (p. 21). Reporting on an

experiment on classroom mobile phone use, Tessier (2013) wrote that "an exclusionary approach to mobile phones in the classroom may cause a missed opportunity for educators to relate to students, encourage their participation, and bring up-to-the-minute facts to the classroom activities" (p. 25). Tessier continues: "allowing students to access data via mobile phones opens up a world of opportunities for inquiry-based teaching and learning formats in the classroom" (p. 28).

Hoffman (2017) cautions that teachers need to connect technology with learning objectives so that device use has educational purpose and applications, because "although students use their devices on their own, they could benefit more if their instructors would find deliberate uses for these powerful technologies" (p. 28). With proper implementation, educators will avoid fighting the potential distraction of mobile devices and students will feel empowered and guided in their use of their mobile devices, gaining media literacy skills. New technologies allow instructors "to explore new means of student collaboration, to provide complex modeling and virtual experience opportunities, to study simulated and informal learning techniques, and to enhance students' research capabilities" (Plymale, 2007, p. 85). In a review of literature, Ledbetter and Finn (2013) found that in-class technology access may enhance student satisfaction with their degree program, equip students with Internet research skills, and facilitate continued online learning outside the classroom. Terras and Ramsay (2012) felt that "mobile devices have a number of unique characteristics such as portability, connectivity, convenience, expediency, immediacy, accessibility, individuality and interactivity and hence offer the potential of educational applications above and beyond those of traditional information and communication technology" (p. 822). Instructors also must inform students about the learning goals of technology; "students need to understand the pedagogical purpose of technology for an application to be successful" (Terras & Ramsay, 2012, p. 825).

With such benefits, it is surprising that, with few exceptions, researchers have offered few tested ideas or positive outcomes. Olufadi (2015) speculated about ways that instructors can integrate mobile devices, recommending that instructors find creative ways and guidelines for integrating phones for class use:

> For instance, the lecturer may create a competition among students, by rewarding (say, the first three students) to text the correct answer to the question being asked. This kind of approach will largely reduce boredom (one of the major reasons students may decide to use their mobile phones during lecture periods) and increase students' engagement with the materials being presented. (p. 432)

In a study of an environmental issues class with carefully integrated mobile phone use, Tessier (2013) found that "students felt that mobile phones helped their learning, encouraged their enjoyment of the class, improved their success in the course, marginally increased their attendance, and were not an important distraction" (p. 25). Therefore, mobile phones can be a tool for learning and a means to help students access and take ownership of knowledge (p. 25). Olufadi reasoned that an integrated approach to phones in the classroom has an advantage:

> There is no need for them to look at their mobile phones because they have the conviction that they will soon have access to their mobile phones. Thus, this may allow them to preoccupy themselves and focus on the lecture or the materials been […] presented rather than thinking of their mobile phones. (p. 433)

Traditional barriers to technology integration, including fear of change, lack of training, modeling, lack of personal use, motivation, and a negative school environment may hinder the integration of mobile phones into the classroom (O'Bannon & Thomas, 2015, p. 111). These barriers "prevent teachers from developing the knowledge, pedagogy, and self-efficacy necessary to move past 'low levels' of technology integration and enable teachers to take full advantage of the instructional benefits that technologies provide" (O'Bannon & Thomas, 2015, p. 111).

O'Bannon and Thomas conclude:

> To accentuate the pros and minimize the cons associated with 1:1 computing with mobile devices like mobile phones, teacher preparation programs need to instruct preservice teachers on how to use them effectively in the classroom. Integration is dependent upon preservice teachers' experience with faculty who effectively model the use of technologies. (p. 117)

This information led us to ask the following question:

RQ1: Are instructors integrating mobile phones into pedagogy, and if so, how?

Effects of mobile phones in the classroom

Research about student mobile phone use in the classroom often explores the negative impact of their use in college classrooms, typically focusing on the detriments of non-academic use. These include distracting the student (Benjamin, 2016; Berry & Westfall, 2015; McCoy, 2016; Muyingi, 2014)

supporting cheating (Bain, 2015; Campbell, 2006, O'Bannon & Thomas, 2015), distracting other students nearby (Lowe, 2017; O'Bannon & Thomas, 2015; Tindell & Bohlander, 2012), as well as cyberbullying, cheating, and access to inappropriate information on the Internet (O'Bannon & Thomas, 2015). In research surveys, students themselves recognize these negative impacts to themselves and to other students (Olufadi, 2015; Tindell & Bohlander, 2012).

Researchers have reported other negative effects of unregulated mobile phone use in the classroom. Kuznekoff and Titsworth (2013) reported, "students who use their mobile phones during class lectures tend to write down less information, recall less information, and perform worse on a multiple-choice test than those students who abstain from using their mobile phones during class" (p. 251). In addition, such phone use interferes with students' ability to concentrate on other activities (Elder, 2013). Wei et al. (2012) indicated that mobile phone use interrupts students from focusing on the main learning task in class. These researchers discovered that when students send text messages in class, they must switch back and forth between information processing tasks (e.g., sending a text message and listening to the lecture). This switch is distracting to students and causes them to pay less attention to the material being taught (Stephens & Pantoja, 2016; Wei et al., 2012). To manage this distraction, some sort of technology policy should be implemented in the classroom (Tindell & Bohlander, 2012), hopefully one which harnesses the power of mobile phones for pedagogy while discouraging learning-distracting use.

Texting, not typically a part of lesson plans, is one use of mobile phones that bothers instructors the most. Holtgraves (2011) studied the mobile phone habits of 224 college students and found that the classroom setting was the respondents' second most popular environment for texting, and, unfortunately, that the texting is used less for informational purposes and more for social connections. Researchers list several motivations students have for texting in class, important information for instructors trying to curb non-class use of mobile phones. Some students might text because it gives them a sense of control (Madell & Muncer, 2007; Stephens & Pantoja, 2016); others might text because it is a form of escape (Jin & Park, 2010). Furthermore, students might be texting in class because they do not have a high level of self-regulation and thus do not have strong willpower to block out the distraction of incoming text messages (Stephens & Pantoja, 2016; Wei et al., 2012).

On the other hand, some researchers have posited that mobile phones could contribute positively to student learning when used productively in the classroom (Ledbetter & Finn, 2013; O'Bannon & Thomas, 2015). For example, Cheung (2008) posits that mobile phones could contribute to classroom experiments by making it easier and more efficient for students to text in answers or participate in online experiments. O'Bannon and Thomas's (2015) subjects reported, "mobile phones were most beneficial in developing digital fluency, providing anywhere/anytime learning opportunities, providing opportunities for differentiation of instruction, and increasing access to technology in the classroom" (p. 114). However, studies that confirm or disconfirm these potential effects are rare.

This research led us to ask:

RQ2: Why do college instructors believe policies about mobile phones in the classroom are needed?

Technology Policies in the Classroom

Technology policies can be defined as "rules governing the use of wireless communication technologies in the classroom" (Finn & Ledbetter, 2013, p. 27). Ledbetter and Finn (2013) studied technology policies and teacher credibility in classrooms and categorized policies into three different groups: *encouraging policies* (using technology in the classroom for educational purposes), *discouraging policies* (forbidding technology in the classroom for non-educational purposes), and *laissez-faire policies* (teacher has no formal policy regarding how students use technology in the classroom) (Ledbetter & Finn, 2013; Tatum et al., 2018).

The nature of the policy matters. Lee et al. (2017) put four of the most common policies to the test, measuring the effects of those policies on students' learning and emotion-regulation style, the four conditions were: (a) mobile phones allowed to be used during the lecture; (b) mobile phone possession allowed during the lecture but usage forbidden; (c) mobile phones not allowed in classroom at all; and (d) a no-instruction control group. Throughout instruction, text messages were sent to students to serve as the kind of distraction routinely presented on mobile phones. Students were given a multiple-choice test on the subject matter to measure comprehension and retention right after the lecture. In addition, students completed a questionnaire that measured their self-reported obsessiveness,

nomophobia (the situational anxiety that comes with the inability of accessing the phone and the concomitant feeling of being left out of friends' conversations), and lack of mindfulness (inattention and mind wandering) regarding the use or non-use of their phones. When the mobile phones were unavailable, that is, totally disallowed in the classroom, the student subjects performed significantly better on the test than any of the other conditions regarding the mobile phone. The authors conclude by stating: "Despite the increasing use of technology such as mobile phones in the classroom, the present study cautions against doing so as attention can be compromised in even a short 20-minute lecture because of mobile phone distraction" (Lee et al., 2017, p. 5).

University instructors often have the autonomy to create their own technology policies. According to a study by Tindell and Bohlander (2012), "colleges are now struggling with how to implement effective policies regarding mobile phone use" (p. 2). Baker et al. (2012) noted that "unlike elementary and secondary schools, most universities have seemingly been slow to develop cell phone use policies, presumably because college students are viewed as adults who can wisely govern their own use of this technology" (p. 277). College instructors must therefore choose for themselves whether they will encourage, discourage, or simply disregard mobile phone use in their classroom. They must decide whether, and how, they will enforce their policies – and this decision is not an easy one. Such a choice can depend on the subject matter, maturity of students, and the resources available to the instructor. Unfortunately, many ban the use of devices in classes because of "campus policies, past negative experiences, or lack of knowledge on how to make use of them in pedagogy" (Hoffman, 2017, p. 19), rather than employing them creatively in lessons.

It would be helpful for future educators to know which mobile phone policies are most effective in the classroom (Wei et al., 2012). For example, Hanson et al. (2011) suggested the idea that students play a role in creating a creative technology policy alongside the professor. Getting students involved in the creation of the policy might make them more willing to comply (Hanson, et al., 2011). An example policy from our study respondents was: "These computer and mobile phone policies have been developed on the recommendations of previous students who found the inappropriate behavior distracting."

A handful of researchers have investigated the effects of mobile phone policies in the classroom. Olufadi (2015) investigated why students continue to use their phones in class despite acknowledging how distracting it is and remain undeterred by instructor policies against such use. It is only through understanding these motivations that teachers can devise effective in-class policies for mobile phone use. Olufadi (2015) found six major reasons students consistently give for their classroom use of their phones: boredom, class-related use, social connection, emergency, addiction, and perceived behavioral control (p. 432). Studies also found that students also react differently to policies for different types of technology; students seem to be more sensitive to policies regulating laptops or tablets than mobile phones, "perhaps because they see these devices as more essential to classroom activities" (Finn & Ledbetter, 2013; Tatum et al., 2018, p. 229).

Finn and Ledbetter (2013) explored how technology policy can have an impact on feelings toward the instructor; policies can affect attitudes toward instructors and instruction in general. For example, when instructors encourage technology use for educational purposes, students perceive the instructor as more credible, competent, and caring than those who use discouraging policies; "students are most likely to feel that the course is valuable (meaningfulness) and that their participation makes a difference (impact) when the teacher highly encourages students to use technology for course-related purposes" (p. 312).

On the other hand, "when instructors discourage students from utilizing technology for instructional purposes, students perceive them to be more verbally aggressive" (Tatum et al., 2018, p. 229). Because students expect to utilize mobile devices during class for academic purposes, perceptions of instructional variables improve when these expectations are met (Tatum, Olson & Frey, 2018). Incorporating ways in which students can "use their devices in the classroom to complete assignments is one way for instructors to meet this expectation, and students may then feel they are influencing what is happening in the course and that the course is more interesting and valuable" (Ledbetter & Finn, 2013, p. 312). Students also respond to the clarity or ambiguity of a policy; students see instructors as more credible when there is a clear policy about technology use.

Several studies have examined what students want in a policy. Most prominently, students desire choice in how they use technology in the classroom. Psychological Reactance Theory predicts that when students feel their autonomy is threatened (freedom threat), negative feelings like anger are produced and

policies are ignored (Tatum et al., 2018). Even for policies that encourage or require technology use for instructional purposes in class, "students may perceive the policy unfavorably because their freedom to choose has been taken away" (Tatum et al., 2018, p. 229). Baker et al. (2012) reported that for both faculty and students, "roughly two thirds of respondents believe the policy should be solely determined by the course instructor, included in the course syllabus, and discussed in class" (p. 286). Although faculty favored a preference for a university-wide policy, students leaned toward a policy that is democratically determined through class discussion. Shuter et al. (2017) surveyed American and Indian students about mobile phone policies. This study concluded that American students prefer digital policies that are discussed in class, included on the course syllabus, and positive about potential use of mobile phones for improving learning activities. Regarding policies, all students "would like to be 'consulted' by their instructors on decisions as well as question instructor ideas presented in class" (p. 13). American students, in particular, value individual rights and want a voice in their classes.

This information led us to ask the following questions:

RQ3: What policies about mobile phones in the classroom do higher education instructors use?

RQ4: How are policies about mobile phones enforced?

RQ5: How effective are these policies?

METHOD

Participants

The target population for this study was college instructors. Participants voluntarily completed an online survey. Participants were recruited through items in two electronic newsletters (National Communication Association and National Association for Media Literacy Education) as well as a mass email sent to a random sample of 4,000 higher education instructors. The participants were asked to report their age, department, title, and length of time teaching in their current discipline. Faculty members who chose to identify their age ranged from ages 24 to 76, with an average of 49.65 years old. The range of time participants were employed in their department was 1-50 years, with a mean of 17.15 years. Males represented 37.38% of the sample.

Procedure

The researchers presented an online survey of 37 total questions, of which 13 were open-ended questions and 24 were multiple-choice questions, including 10 demographic questions (questions are listed in Appendix A). The questions were created for this study based on the literature presented and with the aim of answering the research questions. A total of 156 participants from a variety of colleges throughout the U.S. submitted a survey. Data were cleaned to eliminate surveys that were incomplete or for respondents who did not meet the age-limit of 18 (19 in Alabama) and American citizenship qualifications. This yielded a sample of 132 respondents – a modest sample, but one useful for an initial exploration. For analyses, instances of missing data were handled through listwise deletion, which explains variation in *N* from analysis to analysis. Complete quantitative results for multiple choice questions are listed in Appendix A. Qualitative questions were optional and therefore response rates vary.

RESULTS

Quantitative overview

Most college instructors in the survey (77%) confirmed having a mobile-phone-use policy. Of these, 88% publish their mobile-phone policies in their syllabi. Almost all (91.6%) report that these policies were created by themselves, rather than their department, school, or university. Of those instructors who have policies, 54.1% reported that their policy is effective in preventing unregulated mobile phone use. Some instructors (54.6%) impose penalties on students who do not follow the syllabus.

Participants were also asked about mobile phone policies when they themselves were undergraduates. Tellingly, 75% of respondents said that mobile phones did not exist when they were students, and 12% said phones existed but were prohibitively expensive. Therefore, 87% of faculty respondents have no experience with mobile phones from a student perspective.

RQ1: How are phones being used?

Of particular interest to us was whether, and how, instructors are currently incorporating mobile phones in the classroom. In answer to "Do you ever allow mobile

phones to be used in class exercises," 73.7% said yes. Respondents were then prompted to share those exercises briefly. As noted in other studies, the vast majority of responses were *basic* use of the technology (Hoffman, 2017). Of the 82 responses to this open-ended question, 40 indicated mobile phones are used for in-class research, whether to quickly look up information pertaining to that day's topic or to locate sources for speeches or papers. Although some of these activities existed before and could be done without mobile phones, this use has its merits, according to our respondents. Examples given include the ability to access current events and examples immediately to initiate student discussion.

More important, however, is that instructors are (consciously or unconsciously) employing a tool that students already like to use, yet teaching them to employ them productively to satisfy curiosity, access multiple sources, and evaluate those sources. These are three of the key steps in the definition of media literacy: Access, Analyze, Evaluate (National Association for Media Literacy Education, n.d.). The nuance of the activity is important, but most respondents did not provide many details; some uses may be more novel than they appear in respondents' comments. For those who did elaborate on such uses, some "research' activities paired with traditional classroom methods approached deliberate use, where technology adds to what was previously available in the classroom. For example, think-pair-share became research-pair-share (or search-pair-share), new activities requiring group collaboration, and individual access to video, audio, and photographic evidence. Of 82 responses, 26 indicated that they have students use mobile phones for in-class quizzes, polling, and surveys. In particular, *PollEverywhere* and *Kahoot!* were mentioned multiple times. Although, perhaps, only a step above a basic use, in-class responses are useful, in particular for larger classes, for encouraging student feedback and gauging student learning in real time. Some other deliberate mobile phone activities given by respondents included icebreakers, coordinating schedules (e.g., for group work), recording speeches and lectures, and photographing classroom artifacts. One use that emerged that we did not find reference to in literature is allowing students to augment learning by recording and photographing classroom presentations and materials for later study.

Truly intentional and integrated exercises employing student mobile phones were rarely mentioned. Particular educational areas where respondents are integrating mobile phones include media and journalism classes, art, education, foreign languages, and music. In particular, art and journalism instructors use mobile phones to take the final step in media literacy – the Creation of content (National Association for Media Literacy Education, n.d.).

Others employ specialized apps designed for their subject; examples given included music, languages, genetics, and medicine. It is promising that education instructors in particular are interested in embracing mobile technology. A respondent said, "I teach in the education department, and it is important for me to model different teaching strategies and ways of using technology," which echoes the call made by O'Bannon and Thomas (2015).

RQ2: Why are policies needed?

For RQ2, respondents who had policies were asked why they felt a policy was necessary. It is important to note that the mobile phone use these instructors talk about is mostly initiated by students themselves for non-academic use. Of 44 responses, 56.8% mentioned that mobile phones were a distraction, whether to the student using the phone, the instructor, and most important, other students around the user who have no control over the distraction. In addition, 34% mentioned that they felt mobile phone use in the classroom creates barriers to learning. For example, instructors were concerned that phone use in class creates competition for the attention of the student, reduced student engagement and participation, caused students to miss important instructions for assignments, and "destroys the learning environment for all." Four respondents specifically mentioned policies are used to prevent cheating, and three felt that mobile phone use shows a lack of respect for others. There was a strong theme of frustration throughout the comments. For example, one instructor wrote, "I find it annoying to lecture to the tops of people's heads."

For those who did *not* have a policy, we asked them to share why, and found more promising results. Thirty responses were collected. Ten respondents said that college students are adults and should be able to use their judgment to regulate their mobile phone use to manage their time and attention, and that they should be practicing this in college classes. Seven respondents mentioned that they see policies as contradictory to their efforts to use mobile phones for learning activities. Five respondents mentioned that they feel if they are teaching successfully, lessons should be engaging enough to prevent non-academic mobile phone use. Several felt

that policies are not enforceable, or they don't want to police students. One respondent summed it up this way: "Appropriate mobile phone use varies based on what is being done in class."

RQ3: What policies are used?

For RQ3, respondents who had syllabus policies were asked to share their policies. Most policies were prohibitive of cell phone use. The 75 mobile-phone and/or technology policies resulted in 13 categories of policies. Three types cover more than 86% of all policies given: (a) No phones or computers during class without a penalty indicated for violations (23); (b) No phones or computers during class WITH a penalty indicated (21); (c) No mobile phones in class unless instructor leads a class activity necessitating them, no penalty listed (15); and (d) No mobile phones in class unless instructor leads a class activity including a penalty (6).

Explicit mention of exceptions for students with documented adaptive needs (*not* learning styles) were also an important part of some policies. An interesting theme among the policies was offering explanation for the policy in the syllabus, and even citation of research and statistics. Offering evidence and reasons for the policies could be effective; an example from a respondent was:

> Technology brings many opportunities for engaging with ideas and efficiently organizing notes, assignments, and other course-related materials. At the same time, technology can be a tempting distraction from fully participating in class that affects your learning and that can distract others around you from learning. Therefore, the use of mobile phones is not appropriate during class; these devices must be turned off.

Examples of cited research include "Research shows that texting in class affects your ability to pay attention in class and remember information (Wei et al., 2012), and results in lower grades than students who keep their phones away," and:

> According to *Communication Current* in August 2015, "Students who do not use their phone in class score 13 percentage points (i.e., a letter grade and a half) higher on a test, are 62 percent better at taking notes, and remember more information from a lecture than students who were frequently using their mobile devices." (Kuznekoff, 2015)

RQ4: How is policy enforced?

For RQ4, instructors were then asked to share incentives, penalties, and warnings used to gain compliance with their policies. Of 68 responses, 28 of them stated they did not use incentives, and some were even incredulous that college students should need incentives to follow policy and improve their own learning. The majority of those who use incentives award points for policy compliance, mainly participation and attendance. Nine respondents mentioned simply reminding students that their success in learning, in the classroom or outside, depends on giving undivided attention. Interestingly, five respondents mentioned *using* phones for directed class activities as an incentive. One useful technique example was to offer students "technology breaks" in a controlled time period to all students to "get it out of their system" – provided they have stayed off their phones at other times.

Regarding the warnings, if any, that the teachers give to the class or individual policy violators, by far the greatest number of survey participants (30) choose to simply ask students to put the mobile phone or computer away. Others (22) report a variety of responses, including: (a) lowering of grade if student does not put the phone away; (b) asking the student to pay attention; (c) announcing in the middle of class time that it is not a time when technology is needed; (d) reminding students of the policy at the start of each class to put phones away; (e) giving the violator a stern look; and (f) asking the student using the phone to leave the room to complete the call.

The penalties given out to students who violate the mobile-phone policy also vary. Fifty-one survey respondents provided an answer for this, and most (25), subtract participation points or mark the students absent for the day, both of which affect grades. The next most common penalty is asking students to leave the classroom (12). Five have a specific penalty for the use of the phone during an exam/test and that is to give the student a zero for the test (5). Three instructor-respondents take the phone away from the student for the remainder of the class time. Two ask the student to put the phone away and feel that the embarrassment of being called out is punishment enough.

Other penalties used by one instructor each are: (a) urging the student to focus; (b) giving a zero on the next speech to a student who uses the phone during another student's speech; (c) failure in the course if the constant distraction does not stop; and (d) requiring the student to bring cookies for all students to the next class.

RQ5: Are policies effective?

For RQ5, instructors were asked to share how they felt about the effectiveness of their policies. Of the 32 responses, 15 were on the fence – they said it "mostly" or "usually" works, but is not entirely effective. Some instructors – 13 of them – stated that students will use their phones anyway, no matter the policy. In particular, respondents stated that policies work well in the first part of a semester, and for upper-level classes. The responses are an indication that policies are needed, but they need to be better thought out or crafted to produce better compliance.

DISCUSSION

This study confirmed that mobile phones are important enough for most college instructors to both recognize potentials for pedagogical use, yet also that unregulated use requires the need for classroom policies. One respondent summed up mixed feelings about mobile phones: "Today's phones are an amazing tool, but can create many problems as well."

At least half of higher education teachers in our study feel strongly that mobile phones, used in an undisciplined manner, can be a distraction and therefore have harmful effects on learning, attention, engagement, and classroom climate, effects confirmed by other research studies. Instructors feel the need for policies, although there is recognition that strict and discouraging polices take time and effort, result in a lack of compliance, and create negative attitudes toward instructors, as predicted by Finn and Ledbetter (2015) and Ledbetter and Finn (2015).

Policies should, as one respondent wrote, focus on: "…what I really want: attention, and no distractions to other students," and as one respondent said: "As with any tool – a book for example – it is how it is used that I stress." In other words, instructors want to control unregulated, harmful use, yet harness the potential of the technology. Collaboratively creating policies with the adult students in a college class may be a good way to ensure compliance. Other instructors may find that only strict policies and enforcement work in their classrooms. However, as with many teaching policies, the technology policy needs to fit the situation: the course content, the class climate, the instructor style, and the edicts from administration.

On the other hand, there is a growing minority who accept that mobile phones are ubiquitous and, as one respondent wrote, "with that recognition, we can start using them in the classroom as aids rather than obstacles." Higher education students *will* use their phones, so educators want to find productive uses and teaching moments with them. As adults, college students should be practicing professional ways to make use of technology. One respondent hopefully wrote: "I can imagine a very vital classroom where smartphones play an important role."

Policy need not ban all mobile phones, but advise and teach. For example, one respondent uses this encouraging policy: "I urge you to use your phones during class to take notes and interact with classmates. Mobile phones are powerful tools, and this semester, we will explore the ways in which they facilitate communication."

This study found, however, that instructors are not yet *integrating* mobile phones into pedagogy, but largely only employing them for basic use. Instructors said that lack of resources and research on pedagogical mobile phone use in higher education is one roadblock. For example, one respondent concluded: "I would like to use mobile phones in my class with more structure. Looking for ideas and what others do." Another emphasized the importance of researchers *assessing* pedagogical uses, writing that "There are many positive pedagogical ways to use cell phones, but any measurement of these should also try to measure how many students get sucked out of the learning experience by drifting off to FB or sports or... that cost is a huge problem." Other roadblocks include previous negative experiences with mobile phones in the classroom, or a lack of confidence, experience, or understanding on the part of instructors who are not digital natives.

Baker et al. (2012) summarized the problem:

> In short, most students are digital natives, most teachers are digital immigrants, and most administrators are neither. Ironically, though, it is the administrators who create most of the policies forbidding electronic devices in the classroom, without ever consulting students or teachers. (p. 227)

Limitations and future directions

Most research surveys, like ours, would benefit from larger and more diverse respondents. Although we were pleased by our responses, they were a very small proportion of those we contacted. Based on our literature search and the pleas of respondents who want to integrate mobile phones into pedagogy, more formal reporting, testing, and dissemination of pedagogically integrated use of mobile technology in the classroom is

needed, particularly for college-level instructors. Our single, simple question about classroom use did not gather detailed enough information to result in specific lessons to be shared; it lacked detail at the level of lesson plans and the connection of mobile phone activities to common learning objectives. Assessment of the use of educational mobile apps and lessons employed by instructors would also be incredibly useful to both designers and users.

Conclusion

The present literature review and study may seem to present a pessimistic picture for the use of the mobile, powerful pocket-sized computers carried by every college student. Yes, in some classrooms, in some subjects, with some students and instructors, mobile phone use, not unlike tablets or laptops or even calculators, will not be (even perhaps should not be) embraced. Like any technology, it takes time and effort to build integration with educational goals. The difference may be that mobile phones arrived so quickly and with so many features that students got ahead of instructors in developing habits and use patterns. This study found both that there are instructors who are not willing to allow mobile phones in their classrooms, and that there are those willing to explore using them given some creative and tested pedagogical ideas.

The overwhelming opinion of these respondents is that dealing with students' inability to put their phones down and pay attention to the instructor is a problem that is difficult to control. Instructors need to evaluate their policies and the reasons for their content; policies should be shaped by the impetus for the best learning experience for adult students. Although the right policy will vary by classroom, instructors need to provide support for each other and share successful ways to integrate the students' favorite tool. Like scientific calculators, videos, laptops, and tablets, instructors must keep educating students about technologies that are found everywhere in the society the student will soon enter. As educators, it is our responsibility to help students develop skills for using technology both for active and engaging classroom experiences and for life-long learning (Tessier, 2013), such that students learn to regulate technological distraction and employ mobile phones in a professional and useful manner before embarking on careers. It is vital that researchers and university instructors develop working solutions for the issues discussed in this paper, and be willing to share their results at conferences, in papers, at panel discussions, and in online groups. Instructors await creative and tested ideas for integrating mobile phones into our classrooms.

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APPENDIX

Survey Questions and Results

Do you have a policy about cell phones in your classroom at this time?
Yes: 77.7% No 33.2%

If Yes:
Do you have a policy in your syllabus?
Yes: 88.0% No 12.0%

If Yes:
Please copy and paste the technology policy from your selected syllabus below. (N=78)

Do you require your students to sign and turn in a statement indicating that they have read and agree to the terms in the syllabus?
Yes: 10.3% No: 89.7%

Have you noticed any effect (positive, negative, none) of this requirement on classroom behavior regarding use of the cell phone?
Positive: 20% Negative 0% None 60%

Do you impose any penalty for students who do not abide by the syllabus?
Yes 54.5% No: 45.5%

Please specify that penalty here: (N=42)

Who created this policy?
Myself: 91.6 % Department: 2.4% School or College: 1.2% University: 0%

Please explain what made you feel it was necessary to have this policy? (N=81)

At the beginning of the semester, what do you tell the class about your technology policy? (N=79)

What (if any) encouragement or incentive do you give to your students to follow your technology policy? (N=70)

What (if any) warning do you give to your students to not disobey your technology policy? (N=74)

About how many times have you ever had to admonish a student in class for not following your cell-phone policies?
(Type in a number.) Mean: 11.6

About how many times have you ever had to dismiss a student from class for not following your cell-phone policies?
(Type in a number.) Mean: 1.03

Do you feel that your cell-phone policy works in that it prevents students from using their phones during class when you have not given them explicit instructions to use their phones?
Yes 54.1% No 14.7% Sometimes 31.2%

If No Policy:

Please explain why you do not have a policy at this time below: (N=30)

Do you ever allow cell phones to be used in class exercises?
Yes: 73.9% No: 26.3%

Please share the exercise(s) briefly below. (N=82)

What was the cell-phone policy most of your teachers had when you were in undergraduate school? Select the best answer.
Cell phones did not exist when I was in undergraduate school: 75.22%
Cell phones were not a distraction in class because most students could not afford them: 12.39%
The teachers required that all cell phones be turned off during class: 6.19%
The teachers required that all cell phones be turned to "vibrate": 5.31%
We were required to put our cell phones in a box or other container upon entering the classroom: 0.88%

Please share any other thoughts on this topic below: N=56