

Spring 2017

Effect of Student Classroom Cell Phone Usage on Teachers

Daniel Pulliam

Western Kentucky University, dpulliam@perryschools.org

Follow this and additional works at: <http://digitalcommons.wku.edu/theses>

 Part of the [Cognitive Psychology Commons](#), and the [Educational Psychology Commons](#)

Recommended Citation

Pulliam, Daniel, "Effect of Student Classroom Cell Phone Usage on Teachers" (2017). *Masters Theses & Specialist Projects*. Paper 1915.
<http://digitalcommons.wku.edu/theses/1915>

This Other is brought to you for free and open access by TopSCHOLAR®. It has been accepted for inclusion in Masters Theses & Specialist Projects by an authorized administrator of TopSCHOLAR®. For more information, please contact topscholar@wku.edu.

EFFECT OF STUDENT CLASSROOM CELL PHONE USAGE ON TEACHERS

A Specialist Project
Presented to
The Faculty of the Department of Psychology
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements for the Degree
Specialist in Education

By
Daniel Pulliam

May 2017

EFFECT OF STUDENT CLASSROOM CELL PHONE USAGE ON TEACHERS

Date Recommended February 3rd, 2017

Steven R. Winger
Dr. Steven R. Winger, Director of Thesis

Jenni Redifer
Dr. Jenni Redifer

Pitt Derryberry
Dr. Pitt Derryberry

[Signature]
Dean, Graduate Studies and Research

3/14/17
Date

CONTENTS

Introduction.....	1
Materials and Instrumentation.....	6
Results.....	7
Discussion.....	15
References.....	21
Appendix A – Teacher Questionnaire.....	23
Appendix B – Student Questionnaire.....	25

EFFECT OF STUDENT CLASSROOM CELL PHONE USAGE ON TEACHERS

Daniel Pulliam

May 2017

26 Pages

Directed by: Dr. Steven R. Winingar, Dr. Jenni Redifer, Dr. Pitt Derryberry

Department of Psychology

Western Kentucky University

The increase in student cell phone use in classrooms has led to a decrease in academic performance and satisfaction with instruction (Dietz & Henrich, 2014). Currently, it is unknown as to whether student classroom cell phone usage has any effect on the teacher. The purpose of this study was to determine student and teacher opinions of classroom cell phone usage and perceived distraction. Surveys were conducted with a sample of college students ($N = 163$) and college faculty ($N = 289$), from a university in the Southeastern region of the United States. Data indicate there are differing opinions on classroom cell phone usage between students and teachers. Results revealed teachers believe significantly more than students that cell phones should not be used during class. A majority of teachers also reported they have been distracted by students using their phones, while only about half of the students believe their teachers have been distracted by cell phones. Students using cell phones during class may affect more than just their individual academic performance; student cell phone use may actually have a negative impact on the entire class and the quality of teaching.

Introduction

Currently education is making a move toward the use of more technology within classrooms ranging from elementary to the collegiate level. In high schools and colleges, devices being used most commonly for educational purposes are tablets (iOS/Android), smartphones (iOS/Android), and laptops (Windows/Macintosh) (Dietz & Henrich, 2014). These devices are being used in hopes of enhancing students' overall educational performance; students are using devices for activities such as answering questions, examining visualizations, note taking, researching, and communicating (e.g., email) ("Integrating Tech in High School," 2012). Although the intended purposes of these devices are to improve educational experiences for the student, there have also been negative consequences from the introduction of modern technology in the classroom (Junco, 2012). Research has been conducted on the negative effects of cell phone usage in the classroom on students, but the effect of increased cell phone use by students in the classroom on teachers has not been examined. Although there is a lack of understanding of how student cell phone usage affects teachers, there is research demonstrating how cell phones negatively affect the students using them and how usage could also lead to side effects that negatively impact the teacher. The following paragraphs discuss the negative side effects of student cell phone use, the belief of "multitasking," and how distraction can affect cognitive processes.

Research has extensively shown that there are negative effects for students in the classroom when they use their cell phones for non-educational purposes. Junco (2012) found that 53% of undergraduate students at a university reported text messaging during class. Dietz and Henrich (2014) examined 99 college students during a 20-minute

lecture, which was part of the experiment, and the average amount of texts sent and received among each student was 26.29 (14.10 sent, 12.69 received).

Dietz and Henrich (2014) found that since the increase of technology in the classroom (e.g., use of cell phones), there has been an increased report of a decline in overall grades and decrease in seat work. Using cell phones in the classroom has been connected with lower recall and a decrease in student satisfaction with instruction (Dietz & Henrich, 2014); comprehension has also lessened when students use electronic devices for non-educational purposes. Alarming, research shows that even students in proximity to other students using this technology are more likely to perform poorer in the classroom, even when they were not personally using technology (Sana, Weston, & Cepeda, 2013).

When looking at why students use cell phones for non-educational purposes, it was found that students find their devices more exciting and stimulating than what is happening in their class (Sana et al., 2013); students have also been found to continue to use cell phones for non-educational purposes during class instruction, even when they are aware of the negative side-effects of cell phone usage in the classroom. Another reason students use their cell phones in class (e.g., messaging, looking at social media, gaming) is because they believe they can “multitask.” A study by Sana, Weston and Cepada (2013) found that college undergraduate students were observed to be “multitasking” 42% of the time during class. A study by Wood et al. (2012) found that students who used Facebook during a classroom lecture had significantly lower scores on tests of the lecture material than students who only used notes taken with paper and pencil.

There has been plenty of research done about “multitasking” and how the view of students being able to “multitask” is a myth. The ability to truly process two streams of independent information at the same time is nearly impossible; what most people refer to as multitasking is actually considered serial tasking, which is the action of shifting back and forth from one task to another (Fischer & Plessow, 2015)

Knowing the students’ belief of multitasking is important because it needs to be compared to teachers’ beliefs of multitasking. Students who believe they can multitask may be more likely to believe they can use their cell phones and pay attention during class (Kuznekoff, Munz, & Titsworth, 2015). If teachers see that students are using their cell phones during class and do not believe the students have the ability to multitask, it could then distract the teacher. Becoming distracted while teaching may then affect other cognitive processes and harm the teacher’s ability to instruct his or her class.

One of the teacher’s cognitive processes that could be negatively affected by the distraction of student cell phone usage in the classroom is working memory, which is one of the most important cognitive processes for a teacher. Working memory is defined as, “the brain system that provides temporary storage and manipulation of the information necessary for such complex cognitive tasks such as language, comprehension, learning, and reasoning” (Baddeley, 1992, p. 3) Everyone uses working memory to work more efficiently and effectively; however, it has a limited amount of storage in which information can be processed. Working memory is also important for teachers because it is used for staying focused while performing a complex task, such as giving a lecture, attempting to block out distractions (e.g., cell phone use), and maintaining awareness of activities that are going on within the classroom (Eysenck & Keane, 2015).

The example of a teacher attempting to block out the distraction of student cell phone use, delivering his or her lecture, and monitoring students to make sure they are understanding what is being taught could also be considered divided attention. Divided attention is the act of attempting to execute one or more actions at a time, while simultaneously trying to pay attention to two or more channels of information. When people are performing a number of tasks in parallel, they must divide their attention, which can lead to weakened performance (Craik et al., 1996).

If one's working memory is negatively impacted, and a teacher is trying to divide his or her attention among multiple stimuli, it can increase cognitive load. Cognitive load consists of the total amount of mental effort being used in the working memory (Sweller, 1994). When there is a high amount of cognitive load that is placed on an individual (such as a teacher who is trying to teach a lesson and deal with a student using a cell phone during class), research shows that decision making strategies become less effective, and even impaired (Beilock & DeCaro, 2007).

A study conducted by Neisser and Becklen (1975) provides an example of the effects of divided attention and cognitive load. In this study, participants were shown two videos that were superimposed (i.e., laid over top of each other). One of the videos showed two people who were playing a hand game, with the object of the game to slap the opponent's hand; the other video was of three people playing basketball. When participants were told to pay attention to one of the two games, the participants were successful at recalling the events. Next, participants were asked to keep track of both games in the superimposed video, and it was deemed almost impossible as being able to recall events from both of the videos.

When teachers have to focus on delivering the information to the students that are paying attention, their mental effort may be working at full capacity. However, if a teacher witnesses a student using his or her cell phone during classroom instruction it could be considered distracting and be connected to the teacher to delivering a lesson of a lesser quality. Therefore, cell phone policies may need to reflect and take into account the negative outcomes that derive from student use of cell phones.

Summary and Critique

Using cell phones for non-task related purposes during class time has been shown to have negative outcomes on student learning; it also has a negative effect on the students in close proximity. However, there is little to no research on how non-educational uses of cell phones by the students affect teachers' performances. When a teacher sees a student texting, or using his or her phone inappropriately, it may have a negative impact on the teacher's ability to teach. Thus, there is a need for research that examines the effect of non-educational cell phone usage by students on teachers.

Statement of the Research Questions

- I. What are the opinions and rationales about allowing cell phone usage during class?
 - a. Teacher vs. Student
- II. What are the opinions about multitasking?
 - a. Teacher vs. Student
- III. What is the impact of student use of cell phones during class on the teacher?
 - a. Teacher vs. Student

Hypotheses

- I. Students will be more likely to believe that cell phones should be allowed in class than teachers.
- II. Students will be more likely to believe that individuals have the ability to multitask compared to teachers
- III. Teachers will be more likely to think student cell phone usage during class is a distraction compared to students.

Methods and Instrumentation

Participants

Participants consisted of students from a regional comprehensive university ($N = 163$). Sixty-one percent of the students who completed the survey were female. The sample of students who completed the survey consisted of 40 percent freshmen, 22 percent sophomores, two percent juniors, 15 percent seniors and one percent graduate students. Faculty at the same university completed a slightly different survey ($N = 289$). Sixty percent of the teachers and faculty who completed the survey were female. The mean years of teaching among those who completed the survey was 15.04 years, with overall years of experience ranging from one to 55, with a standard deviation of 10.73. Students who completed the survey were given extra class credit, if deemed appropriate by their professor. Faculty who completed the survey had their names put into a lottery for a drawing to win one of the four, twenty-five-dollar gift cards (\$100 total).

Instrumentation

A student self-report questionnaire containing 13 items and a teacher self-report questionnaire containing eight items was used to assess attitudes about cell phone use in college classroom, as well as demographics. The questionnaires used were based on questions used in a previous study by Tindell (2012). For the items in the current study, participants were asked to respond to yes or no questions, open-ended questions, and interval scales questions; each item was scored as a standalone construct.

Procedure

Questionnaires were used to assess participant attitudes about cell phone usage in college classrooms and the distraction cell phone usage may cause on the teacher's ability to teach. For the student portion of the sample, questionnaires were administered through general education classes in which participants could earn extra class credit, if determined appropriate by their professors. Questionnaires were administered to the faculty portion of the sample through the university email system where they were placed in a drawing to have a chance to win one of four gift cards for twenty-five dollars (\$25). Surveys took approximately five to ten minutes to complete. All participants received informed consent notifying them that participation was voluntary and confidential. Data was collected during the 2015-2016 academic year. Prior to data collection, the university's institutional review board granted permission to conduct the study.

Results

The following section describes: (a) general descriptive statistics on student and teacher cell phone usage, (b) student and teacher opinions on whether cell phones should be used during classroom and student rationale for their opinion, (c) student and teachers'

beliefs about multitasking, and (d) teacher cell phone distraction beliefs and how teachers handle distraction. To analyze the results, teacher and student answers were compared using chi-squared tests, t-tests, and frequency counts.

General Statistics on Student and Teacher Cell Phone Usage

To investigate if there is a difference between the number of students and teachers who bring their phones to class, an independent t-test was conducted. Table 1 is a *t*-test of how often students and teachers bring their phones to class with an alpha level of .05. Students and teachers selected one of three options (1 = Yes, always; 2 = Yes, sometimes; or 3 = No, never) to indicate how often they bring their phones to class. The mean response for teachers ($M = 1.68, SD = .82$) was significantly different from the students' responses ($M = 1.08, SD = .27, t(384.23) = -11.21, p < .05, r = .50$). This indicates that students are significantly more likely to bring their phones to class than teachers.

TABLE 1
Do you bring your cell phone to class?

<u>Group</u>	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>	<u>Std. Error Mean</u>	<u>Did Not Respond</u>
Teachers	287	1.68	.82	.05	2
Students	159	1.08	.27	.02	4

When asked, on average, how many times students use their phones during class time, the mean teacher response was 6.68 times per class, with a range of 0 to 75 times and a standard deviation of 9.87. When asked, on average, how often the teachers have been distracted by a student using a cell phone while teaching, their responses were as

follows: 14% never, 19% once per semester, 21% once a month, 29% weekly, 13% daily, 5% multiple times per day.

When students were asked how easy it is to send or receive text messages in class without the instructors being aware, they answered on a Likert scale from 1 to 7 (1 = very difficult, 4 = neither difficult nor easy, to 7 = very easy). The mean response was 4.61 with a standard deviation of 1.57.

A chi-square statistic was conducted to investigate whether students and teachers differ on typical cell phone status during classroom instruction. Table 2 shows the frequencies and percentages for teachers versus students across response options. Pearson chi-square results indicate that teachers and students significantly differ on the typical status of their cell phones during class ($\chi^2(4, N = 428) = 130.7, r = .48$). These results show that teachers are more likely to have their cell phones put away and that students are most likely to check their phones periodically during class.

TABLE 2
When you are in class, what is the typical status of your cell phone?

Group	My cell phone is <u>turned off</u>	My cell phone is on <u>but put away</u>	My cell phone is on and I <u>periodically check it</u>	My cell phone is on and I <u>regularly check it</u>	My cell phone is on and I <u>regularly check it when I notice a notification</u>
Teachers	73 (27%)	175 (65%)	19 (7%)	1 (<1%)	1 (<1%)
Students	8 (6%)	61 (38%)	77 (48%)	7 (5%)	6 (3%)

Research Questions

Hypothesis number one investigated if students and teachers differ on whether cell phones should be used during classroom instruction, and a chi-square statistic was conducted to answer this question. Table 3 shows the frequencies and percentages for teachers versus students across response options. Pearson chi-square results indicate that teachers and students significantly differ on whether or not students should be allowed to use cell phones during class ($\chi^2 (2, N = 451) = 28.93, r = .25$). Students are more likely than teachers to think that cell phones should be allowed during classroom instruction.

TABLE 3
Do you think students should be allowed to use cell phones during class?

Group	<u>No</u>	Yes, but usage should be kept to a <u>minimal</u>	Yes, they can use as much as <u>they please</u>
Teachers	180 (63%)	86 (30%)	22 (7%)
Students	59 (37%)	82 (50%)	22 (13%)

Tables 4, 5, and 6 depict the rationales for why students chose whether or not they should be allowed to use cell phones during class. Two individuals read all of the responses for the different possible rationales and created coding groups for each possible response. After the categories were established, each individual rated the responses from the separate categories. Upon completion of initial coding, the two raters had an 88%

inter-rater agreement for the “No” rationale, a 92% inter-rater agreement for the “Yes, but usage should be kept to a minimal” rationale, and an 89% inter-rater agreement for the “Yes, as much as they please.” After discussion and debate over the coding responses, there was a 100% inter-rater agreement for all three rationales.

TABLE 4
Students’ rationale for opinion of classroom cell phone use – “No”

Rationale	Frequency
Distraction	30 (57%)
Not Beneficial for Class	13 (25%)
Disrespectful	6 (11%)
Emergency	4 (7%)

TABLE 5
Students’ rational for opinion of classroom cell phone use – “Yes, but usage should be kept to a minimal”

Rationale	Frequency
Personal Choice	29 (31%)
Emergency	23 (25%)
Beneficial to Class	22 (24%)
Important Communication with Others/ Other Responsibilities	9 (10%)
Not an Issue/ Distraction	6 (6%)
Entitled to Use*	4 (4%)

*Includes answers similar to, “Whatever the policy is, it does not matter, because I will use my phone regardless.”

TABLE 6
Students’ rational for opinion of classroom cell phone use – “Yes, as much as they please”

Rationale	Frequency
Personal Choice	18 (69%)

Beneficial to Class	4 (15%)
Not Distracting	2 (8%)
Emergency	2 (8%)

Hypothesis number two investigated student and teacher beliefs about multitasking; an independent t-test was conducted. Table 7 shows means and standard deviations for teacher and student multitasking beliefs. Students and teachers rated their multitasking beliefs by selecting a number on a Likert Scale (1 = People can only focus on one thing at a time; 4 = Some people can focus on multiple things, while others cannot; to 7 = Everybody can multitask). The mean multitasking belief for the student group ($M = 3.65$, $SD = 1.1$) was significantly higher than the mean multitasking belief for the teacher group ($M = 2.96$, $SD = 1.2$), ($t(352.3) = -6.01$, $p < .05$, $r = .31$). Compared to teachers, students are more likely to believe that individuals have the ability to multitask.

TABLE 7
Multitasking Beliefs

Group	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>	<u>Std. Error Mean</u>	<u>Did Not Respond</u>
Teachers	289	2.96	1.22	.07	0
Students	159	3.65	1.11	.09	4

Table 8 shows the percentage of how many times each multitasking statement was selected to represent participants' beliefs.

TABLE 8
Multitasking Belief Selection Percentages

Group	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
Teachers	15%	23%	21%	36%	4%	<1%	<1%

Students	8%	7%	13%	57%	14%	0%	<1%
----------	----	----	-----	-----	-----	----	-----

(1 = People can only focus on one thing at a time; 7 = Everybody can multitask)

Hypothesis number three investigated whether teachers have been distracted by student cell phone use versus if students have noticed a teacher being distracted by cell phones, a chi-square was conducted. Table 9 shows the frequencies and percentages for teachers versus students across response options. With alpha equal to .05, a chi-square test on these frequencies was statistically significant ($\chi^2(1, N = 451) = 72.87, r = .40$). This indicates that teachers reported being distracted by a student using a cell phone more than students perceived teachers to be distracted from students using cell phones.

TABLE 9
Comparison of teachers being distracted by versus student’s perceptions of teachers being distracted by cell phones.

Group	Yes	No
Teachers	250 (87%)	39 (13%)
Students	80 (49%)	82 (51%)

Table 10 shows how students viewed teachers handling distraction, if they believe teachers get distracted by cell phone usage, and Table 11 shows how teachers reported typically handling being distracted by student cell phones usage. Two raters read all responses and labeled them into categories. Once the raters agreed upon the categories, both individuals coded each response under a certain category. After initial coding, there was an 87% inter-rater agreement for how students view the teacher handling distraction and a 91% inter-rater agreement for how teachers handle being distracted. After

discussion and debate, the raters came to a 100% agreement on the both set of responses and their appropriate codes.

TABLE 10
How students view the teacher handling distraction

Action	Frequency
Tell student to put the phone away/on silent	49 (53%)
Warning/stare at student/confront student	13 (14%)
Ask student to leave class	10 (11%)
Ignore student	7 (8%)
Take phone	6 (6%)
Dock participation points/consequences (ex. test/quiz)	5 (5%)
Remind student of cell phone policy	3 (3%)

TABLE 11
How teachers typically handle being distracted

Action	Frequency
Tell the student to put their phone away/on silent	70 (21%)
Make a general comment about your phone policy	57 (17%)
Ignore the student and continue teaching	52 (15%)
Confront the student/speak directly towards the student	45 (13%)
Stare at the student	27 (8%)
Discuss his/her cell phone use after class	27 (8%)
Ask the student to leave the classroom	22 (7%)
Dock the student's participation	18 (5%)
Take the student's cell phone	10 (3%)

Test/quiz	10 (3%)
-----------	---------

Discussion

The hypothesis of students being more likely to believe cell phones should be used in class was supported by student and teacher responses. Students believed that “yes, phones should be allowed during class, but usage should be kept to a minimal.” However, based on the responses, teachers significantly stated that, “no, they did not believe students should be allowed to use cell phones during class” ($r = .25$). Interestingly, even though the majority of teachers did not believe students should use cell phones during class, 7% of teachers still thought students should be allowed to use cell phones as much as they please.

When students believed cell phones should not be allowed in class, it was most often because they believed cell phones to be too much of a distraction. The top rationale for both options of “Yes, but usage should be kept to a minimal” and “Yes, as much as they please” was the notion that using a cell phone during class is the student’s personal choice.

The second hypothesis stated that students would be more likely to believe individuals have the ability to multitask. As previously noted, Cepada (2013) found that college undergraduate students were observed to be multitasking, or using their cell phones, 42% of the time during class. Based on the current study’s results, students ($\bar{x} = 3.65$) are significantly more likely than faculty ($\bar{x} = 2.96$) to believe that individuals have the ability to multitask ($r = .40$). If students believe that they can multitask, it could lead to them believing that they should be allowed to use their cell phones during class

(Kuzenkoff et al., 2015). Based on the number of students who rated a five or higher on their multitasking belief, meaning they are more in favor of believing individuals can multitask, 73% believed they should be able to use their phone during class. As well, based on the number of teachers who rated five or higher on their multitasking belief, 40% allow students to use their cell phones during class. According to the teachers who rated three or below on their multitasking belief, meaning they are more in favor of believing that individuals can only focus on one thing at a time, 63% did not allow students to use their cell phones during class. And if teachers don't believe individuals can multitask, it could be distracting when they see a student texting during a lecture. Based on the number of teachers who rated a three or lower on their multitasking belief, 45% noted being distracted at least weekly to multiple times per day. A student's belief of multitasking could affect whether or not they believe cell phone usage has an impact on the teacher being distracted. 59% of the students who marked their multitasking belief as a five or higher said they've never seen a teacher be distracted by student cell phone use.

The third hypothesis stated that teachers will be more likely to think that student cell phone usage during class is a distraction compared to students. After testing this hypothesis, the findings indicated that teachers self-report being distracted significantly more than students believe teachers are being distracted ($r = .40$). About half of the students had noticed that teachers had been distracted by cell phones usage in class, whereas about half marked that they had never noticed a teacher being distracted by a student using a cell phone. However, a large majority of the teachers who responded indicated that they had been distracted by students using cell phones in class.

Students may have realized that using phones are distracting to themselves and may or may not have a true understanding that cell phones can be distracting to other students around them (Sana, Weston, & Cepeda, 2013). However, it is unlikely students believe their cell phone use is distracting to the teacher, as 51% of students who completed the questionnaire indicated they have never noticed a teacher being distracted.

When students and teachers were asked how teachers typically handle being distracted, both groups stated the most common solution is teachers telling the student to put away or silence his or her phone. Surprisingly, some teachers noted on the open-ended questions that they will give the entire class a pop quiz or test if they observe an individual using a cell phone during instruction, which then becomes a class-wide consequence instead of an individual consequence. Assumedly, these students would then be monitoring one another to make sure phones are not out during class. This consequence for cell phone use then elicits other questions such as: Do the teachers have a quiz ready in case this situation arises? Do teachers make up a pop quiz at that moment? How much is each quiz worth on their grading scale? Is the quiz a valid instructional tool (i.e. value-added)?

Regarding general cell phone usage in the classroom, results showed that students brought their phones to class more often than teachers. Teachers from the survey said that, on average, students were using their phones almost seven times per class. However, only a small percentage (5%) said they were distracted multiple times per day by the use of cell phones. Students also noted that being able to send and receive text messages in their class was neither difficult nor easy.

There was a significant difference in how often students and teachers checked their phones during class. The majority of teachers stated that their cell phones are on, but they make sure to put them away. Students noted that their cell phones are on, and they tend to periodically check them. Surprisingly, some teachers responded that their “cell phone is on and I regularly check it/when I notice a notification.” It leads to the question of when do they check it so regularly? Are these teachers checking it in the middle of discussion and/or a lecture or are they trying to check it without the students noticing? This could also lead to a discussion about, does this in turn distract the students when the teachers are checking their phones? It is harmful academically when students personally use cell phones in class and it possibly could be just as harmful if they see a teacher interacting with a phone (Dietz & Henrich, 2014).

Limitations

One limitation of the current study is that teachers were not asked for the rationale of their answers to whether or not they thought students should be allowed to use cell phones during class. Student rationales were examined, and it would have been interesting to compare the different groups’ rationales. Another limitation was that teachers were not asked why they came up with their classroom cell phone policy. This information could have shed more light on their rationales on why they believe students should or should not be allowed to use cell phones during class.

A possible limitation is the study’s sample of the participants. All results came from participants at a university in the southern region of the United States. Although there were 299 teacher and faculty responses and 158 student responses, this is a small sample size compared to the population of secondary staff and students across the United

States. Regarding staff participants, only 40% were males and 88% were white participants; regarding student participants, almost 40% were freshmen students and 61% were female. White participants made up 73% of the student participants, with the next largest racial group being Black or African American participants at 14%.

Future Research

For future research, the survey's question "do you think students should be allowed to use cell phones during class?" could be changed to "do you think students should be allowed to use cell phones during class instruction?" This manipulation of the question could lead to different outcomes. Teachers who don't have a problem if a student is using their phone during down time, may have a problem if a student is directly using their phone while instruction is being delivered. Because the nature of college courses not having "down time," this question may be better suited for a high school class where there is more free time to complete work during class.

Something that would be interesting to find out in the future would be to determine if a certain type of class, or class size, would make it more difficult or easier to send and receive text messages, or if the action of using the cell phone is solely a personal choice.

Another idea for possible future research could involve having a controlled setting to see if a teacher being distracted by cell phone usage affects students' academic success. Would a teacher with the opportunity to instruct his or her class for a certain uninterrupted period of time have more student success than a teacher instructing a class with frequent student use of cell phones? Another possible interesting idea could be to determine a teacher's immediate reaction to students using cell phones in class. One

possible way of figuring this out could be done by have a teacher, or student-teacher, teach a controlled class where no students use phones and compare their perspective to a class that has a confederate, or multiple confederates, exhibiting cell phone usage.

After completing this study and finding out that the majority of teachers that responded find cell phone use distracting, it would be interesting to observe an actual class to keep track of cell phone usages that occur and see firsthand how the teacher handles the situation if they witness cell phone use. Once the class was finished, it would be interesting to see how many times the teacher saw student cell phone use compared to the actual number of cell phones used, and to determine the level of distraction, if any, it caused. Finally, it would be interesting to find out how cell phone distractions would compare to other distractions in the classroom. For example, if you see a student turn and talk to another student, or witness a student leave the room during a lecture to use the restroom, would a teacher find this more or less distracting when compared to student cell phone use?

Conclusion

It is known that students using cell phones during class are experiencing negative side effects with their academic achievement (Junco, 2012). Whether students realize it or not, their classroom cell phone usage is also leading to negative side effects on other students in proximity (Wood, et al., 2012). Students may believe that using a cell phone during class is a personal choice and will only affect themselves. However, cell phone usage could indirectly have a negative impact on the entire class by negatively affecting the teacher. Teachers don't believe students should use phones during class because they don't believe students can use their phone and pay attention to instruction

simultaneously. Even though approximately half of the students believe cell phone use is distracting to teacher, a vast majority of teachers (87%) consider it distracting to their teaching. Ultimately, if schools truly want their students to perform the best they can academically, prohibiting the use of phones in class should be the only cell phone policy.

References

- Baddeley, A. (1992). Working memory: The interface between memory and cognition. *Journal of Cognitive Neuroscience*, 4(3), 281-288. doi: 10.1162/jocn.1992.4.3.281
- Beilock, S. L., & DeCaro, M. S. (2007). From poor performance to success under stress: Working memory, strategy selection, and mathematical problem solving under pressure. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 33(6), 983-998. doi: 10.1037/0278-7393.33.6.983
- Craik, F. I., Govoni, R., Naveh-Benjamin, M., & Anderson, N. D. (1996). The effects of divided attention on encoding and retrieval processes in human memory. *Journal of Experimental Psychology: General*, 125(2), 159.
- Eysenck, M. W., & Keane, M. T. (2015). *Cognitive Psychology: A Student's Handbook*. New York, NY: Psychology Press.
- Fischer, R., & Plessow, F. (2015). Efficient multitasking: Parallel versus serial processing of multiple tasks. *Frontiers in Psychology*, 6, 1366. doi.org/10.3389/fpsyg.2015.01366
- Jackson, L. (2012). Integrating tech in high school. Retrieved from http://www.educationworld.com/a_tech/tech/tech211.shtml
- Junco, R. (2012). In-class multitasking and academic performance. *Computers in*

Human Behavior, 28(6), 2236-2242.

Kuznekoff, J. H., Munz, S., & Titsworth, S. (2015). Mobile phones in the classroom: Examining the effects of texting, twitter, and message content on student learning.

Communication Education, 64(3), 344-365.\

Neisser, U., Becklen, R. (1975). Selective looking: Attending to visually specified events. *Cognitive Psychology*, 7(4), 480-494.

Sana, F., Weston, T., & Cepeda, N. (2013). Laptop multitasking hinders classroom learning for both users and nearby peers. *Computers and Education*, 62, 24-31.

Sweller, J. (1994). Cognitive load theory, learning difficulty, and instructional design. *Learning and Instruction*, 4(4), 295-312.

Tindell, D. R., Bohlander, R. W. (2012). The use and abuse of cell phones and text messaging in the classroom: A survey of college students. *College Teaching*, 60(1), 1-9.

Wood, E., Zivcakova, L., Gentile, P., Archer, K., De Pasquale, D., & Nosko, A. (2012). Examining the impact of off-task multi-tasking with technology on real-time classroom learning. *Computers & Education*, 58(1), 365-374.

APPENDIX A.

Teacher Questionnaire

Research Questions

1. Do you allow students to use cell phones during class?

- a. No, my course policy does not allow it
- b. Yes, but I ask them to minimize their usage
- c. Yes, they can use them as much as they please

2. If you were lecturing during a class and noticed a student use a cell phone you would:

(Select top three options)

- a. Ignore the student and continue teaching
- b. Stare at student
- c. Make a general comment about your cell phone policy to the entire class
- d. Dock the student's participation grade
- e. Tell the student to put her/his phone away
- f. Ignore the student, but discuss her/his cell phone use after class
- g. Ask the student to leave the classroom
- h. Take the student's cell phone
- i. Other (Explain here):

3a. On average, how many students are in your classroom?

3b. Of those students, on average how many use their phones during class time?

4. On average, how often have you been distracted by a student using a cell phone while teaching?

- a. Never
- b. Once per semester
- c. Once a month
- d. Weekly
- e. Daily
- f. Multiple times per day

5. If you have been distracted by a student using a cell phone while teaching, how have you typically handled this?

6. Please indicate which of the multitasking statements below you agree with most by selecting the appropriate number:

- 1 - People can only focus on one thing at a time
- 2
- 3
- 4 - Some people can focus on multiple things, while others cannot
- 5
- 6
- 7 -Everybody can multitask

Demographics

Age:

Gender:

- a. Male
- b. Female
- c. Other

Ethnicity:

- a. White
- b. Hispanic or Latino
- c. Black or African American
- d. Native American or American
- e. Indian Asian/Pacific Islander
- f. Other

How many years have you been employed as a teacher?

Do you bring your cell phone to class?

- a. Yes, always
- b. Yes, sometimes
- c. No, never

When you are in class, what is the typical status of your cell phone?

- a. My cell phone is turned off
- b. My cell phone is on, but put away
- c. My cell phone is on and I periodically check it
- d. My cell phone is on and I regularly check it
- e. My cell phone is on and I regularly check it when I notice a notification

APPENDIX B.

Student Questionnaire

1. Do you think students should be allowed to use cell phones during class?

- a. No
- b. Yes, but usage should be kept to a minimal
- c. Yes, as much as they please

2. Explain your rationale for your opinion about classroom cell phone use.

3a. Have any of your teachers ever been distracted by a student using a cell phone while they were teaching?

- a. Yes
- b. No

3b. If yes, how did the teacher handle this?

4. Please indicate which of the multitasking statements below you agree with most by selecting the appropriate number:

- 1 – People can only focus on one thing at a time
- 2
- 3
- 4 – Some people can focus on multiple things, while others cannot
- 5
- 6
- 7 – Everybody can multitask

Demographics

Gender:

- a. Male
- b. Female
- c. Other

Year in School:

- a. Freshman
- b. Sophomore
- c. Junior
- d. Senior
- e. Graduate Student

Overall GPA (**Respond N/A if first semester freshman with no GPA**):

Ethnicity:

- a. White
- b. Hispanic or Latino
- c. Black or African American
- d. Native American or American Indian
- e. Asian/Pacific Islander
- f. Other

Do you have a cell phone with text-messaging capability?

- a. Yes
- b. No

Do you bring your cell phone to class?

- a. Yes, always
- b. Yes, sometimes
- c. No, never

When you are in class, what is the typical status of your cell phone?

- a. My cell phone is turned off
- b. My cell phone is on, but put away
- c. My cell phone is on and I periodically check it
- d. My cell phone is on and I regularly check it
- e. My cell phone is on and I regularly check it when I notice a notification

In general, how easy is it to send or receive a message in class without the instructor being aware?

- 1 – Very Difficult
- 2
- 3
- 4 – Neither Difficult, Nor Easy
- 5
- 6
- 7 – Very Easy