Mississippi State University

Scholars Junction

5-3-2019

College Students' Perceptions of Cell Phone Use in Class

John Harper

Follow this and additional works at: https://scholarsjunction.msstate.edu/td

College students' perceptions on cell phone use in class

By

John Harper

A Dissertation
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
in Community College Leadership
in the Department of Leadership and Foundations

Mississippi State, Mississippi

May 2019

College students' perceptions on cell phone use in class

By

John Harper

Approved:

_____
Linda T. Coats
(Major Professor)

_____
Stephanie B. King
(Committee Member/Graduate Coordinator)

_____
Debra L. Prince
(Committee Member)

_____
Christopher Clayton Armstrong
(Committee Member)

_____
Richard Blackbourn
Dean
College of Education

Name: John Harper

Date of Degree: May 2, 2019

Institution: Mississippi State University

Major Field: Community College Leadership

Major Professor: Linda T. Coats

Title of Study: College students' perceptions on cell phone use in class

Pages in Study 83

Candidate for Degree of Doctor of Philosophy

Since the turn of the century, cell phones have increasingly become prevalent within modern society. The widespread use of these mobile devices has proliferated in academic settings in recent years. Ownership of cell phones among college students has soared during the same period. This dissertation joins a growing conversation in education research about the challenges that cell phone use in the classroom has caused. I explored what college students' experiences are with text messaging during class and how they perceive policies for cell phone use for the classroom. This research study was guided by six research questions: (1) What are college students' general experiences with text messaging? (2) What are college students' observations of cell phone use by others? (3) What are college students' practices of cell phone use in the classroom? (4) What are college students' experiences with issues related to cell phone use in the classroom? (5) What are college students' perceptions about cell phone policies for class? (6) Do college students' perceptions of appropriate cell phone policies for class vary by select demographic variables (age, gender, ethnicity, class standing, and community college experience)?

A quantitative cross-sectional research design was utilized to describe college students' perceptions of cell phone use during class and to identify what the perceptions of appropriate cell

phone policies for class are among certain demographics of students. A web-based survey consisting of 28 questions was sent 264 undergraduate and graduate Political Science students with 43 (16%) responding. Descriptive statistics and Pearson's chi-squared statistical test was used to analyze the data. The findings from this research revealed that perceptions of appropriate cell phone policies for class differ among certain demographic variables. Additionally, students think that they should be allowed to use their cell phones during class but agree that policies to govern the use of cell phone during class are needed.

DEDICATION

I dedicate this dissertation to Judy Phillips, who encouraged me to pursue my doctoral degree.

She has been a mentor to me throughout the entire process and has remained a steady source of

inspiration.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

The modern cell phone is the result of numerous technological advancements and

innovations that began in the early 1980s when the Motorola DynaTAC 8000x was introduced

(Ray, 2015). At the time there were other options, commonly referred to as "car phones", but the

DynaTAC was the first mobile phone small enough to carry. It was a bulky, brick-like device,

but advances in technology allowed for subsequent models to be smaller and lighter. These early

cell phones were nearly a foot long, four inches thick, and weighed more than two pounds

(Anjarwalla, 2010). Over the next two decades, the evolution of cell phones yielded a much

smaller product that gained more high-tech capabilities. By the mid-2000s, cell phones were

small enough to fit easily in the palm of a person's hand. Typical features of cell phones from

this era included cameras for taking pictures and the ability to send and receive text messages

(Web Design Depot, 2009).

From teenagers to the elderly, cell phones have become a staple in our society and are

widely considered necessities. They are ubiquitous in modern society and can be attributed to

Apple Inc., a global technology company that produces and sells computer software and

electronics. When Apple introduced the iPhone in 2007, the cell phone transitioned from a

device primarily used for making phone calls to a powerful, compact appliance that allows for

users to be continuously connected with the internet and practically everything it has to offer

(Kerris & Dowling, 2007). Due to the ability of constant connection to the internet and ease of

1

connectivity with other users, cell phones have caused distractions in multiple areas of society from driving, to working, to learning (Tison, Chaudhary, & Cosgrove, 2011). The mobility of modern cell phones combined with capabilities that allow them to provide the same services as internet connected computers has resulted in cell phones being embedded in practically every aspect of the lives of college students (Harrison & Gilmore, 2012). In 2014, 86% of college students owned smartphones (Dahlstrom & Bichsel, 2014). These pocket-sized mobile computers allow users to lead a constant digital lifestyle if they choose (Junco, Merson, & Salter, 2010). The typical college student will spend almost five hours using his or her cell phone each day (Lepp, Li, Barkley, & Salehi-Esfani, 2015). Researchers have examined the relationship between cell phone use and academic performance and found negative correlations between increased cell phone use during class and poor academic performance (Lepp, Barkley, & Karpinski, 2015).

Statement of the Problem

As cell phones have become widespread over the past decade and a half, students have increasingly used them in ways that are detrimental to their learning. The capabilities of modern cell phones allows users the ability to transcend time and space by sending and receiving data and messages over long distances instantly. Cell phones can be considered a survival tool among the likes of money and keys (Emanuel, 2013). More than 90% of the world's population has access to a mobile network (MobiThinking, 2011). Cell phones play a major role in the daily lives of individuals. Young adults are the heaviest users of cell phones (Forgays, Hyman, & Schreiber, 2014). College students are using their cell phones during class for nonacademic purposes. There is a need for research to examine the opinions that college students have regarding the use of cell phones in class.

Purpose of the Study

This research study explores the perceptions that college students have regarding the use of cell phones during class. The goal of this research is to contribute information to the existing body of knowledge in order to help guide academic and administrative policies. Undergraduate and graduate Political Science students at a major university in the Deep South are the participants of this study.

This study explores what college students' experiences are with text messaging during class and how they perceive policies for cell phone use for the classroom. This research sought to discover if any differences in perceptions of cell phone use during class exist among college students based on select demographic variables.

Research Questions

1. What are college students' general experiences with text messaging?

2. What are college students' observations of cell phone use by others?

3. What are college students' practices of cell phone use in the classroom?

4. What are college students' experiences with issues related to cell phone use in the classroom?

5. What are college students' perceptions about cell phone policies for class?

6. Do college students' perceptions of appropriate cell phone policies for class vary by select demographic variables (age, gender, ethnicity, class standing, and community college experience)?

Definition of Terms

Digital Immigrants refers those born prior to the digital age but have adopted many or most aspects of new technology (Prensky, (2001).

Digital Natives refers to people born during in the last decades of the twentieth century who grew up with digital technology (Prensky, 2001).

Engagement is the amount of physical and psychological energy that the student devotes to the academic experience (Junco, Heiberger, & Loken, 2010).

Multimedia learning is presenting words and pictures that are intended to foster learning in a classroom setting (Mayer & Moreno, 2003).

Theoretical Framework

Two theories that guide the framework for this study are cognitive theory of multimedia learning and Alexander Astin's theory of Student Involvement. Students learn in a passive way when instructors use technology ineffectively (Humes & Raisner, 2010). Passive learning in a formal learning environment could lead to negative outcomes; therefore, theoretical frameworks are appropriate when seeking an understanding of the roles that cell phones can play in the classroom. The theory of Student Involvement describes the importance of student involvement in college (Astin, 1984). The theory of Student Involvement consists of three components: inputs, environment, and outcomes. Inputs are the demographical environments, socioeconomic backgrounds, and previous experiences that students faced prior to attending college. Environment accounts for all of the experiences that students will have during college. The outcomes are the knowledge, beliefs, attitudes, and values that students have once they graduate from college. The theory of Student Involvement can explain most empirical knowledge about

environmental influences on student development, can embrace principles from widely divergent sources, and can be used by researchers and college administrators (Astin, 1984).

Cognitive theory of multimedia learning is a theoretical framework that relates to digital learning. It consists of three core principles: essential processing, incidental processing, and representation processing (Mayer & Moreno, 2003). Mayer and Moreno (2003) based their theory of multimedia learning on three assumptions: dual-channel, limited capacity, and active-processing. Dual-channel assumption denotes that humans have separate systems for processing verbal and photographic material. The limited-capacity assumption claims that each channel has inherent limitations in the amount of information that can be processed at once. Active-processing postulates that meaningful learning happens when cognitive processes build connections between verbal and photographic materials.

Humes and Raisner (2010) established that passive learning is detrimental to learning outcomes when technology in the classroom is utilized ineffectively. By seeking to gain an understanding of what students perceive to be effective use of cell phones during class could help to improve learning. Astin (1984) claims that student involvement is made up of inputs environments, and outcomes that can be used by college administrators to improve learning. Mayer and Moreno (2003) maintain that dual-channel, limited capacity, and active-processing collectively allow for meaningful learning to occur. The current study advances the work started by these researchers by combining the theoretical framework established by student involvement theory and theory of multimedia learning with passive learning research then using it as the basis for exploring college students' perceptions of cell phone use in class

Research Methodology

A survey research design was chosen to appropriately answer the research questions in the present study. The researcher obtained a variety of information about the population by utilizing a quantitative, cross-sectional survey research design. A descriptive research analysis was used to provide a description of the participants in the study. The chi-square test for independence was used to test if differences in perceptions of cell phone use exist among select demographic variables. This study makes the following assumptions: (a) all participants in the study will provide honest responses to the questionnaire, (b) participants are a representative sample of all college students, and (c) participants will adhere to the research guidelines of the chosen methodology.

Delimitations

The research design used in this study was chosen because it allowed for the data to be collected efficiently and inexpensively. The target population of the study is confined to one academic department at a major university in the Deep South. This population was selected because it could be quickly and easily accessed by the researcher. The study excludes subjects who are not in Political Science department. The methodology includes a survey research design that is obtained perceptions of college students by utilizing an electronic questionnaire. The questionnaire used in this study was reviewed and approved by the Human Subjects Committee at Wilkes University but no validity and reliability information for the survey was available.

Significance of the Study

The evolution of technology has led to the existence of various products that have endless capabilities. Among these products is the modern cell phone which has a staple in modern

society during last decade. This research study is significant because it will help administrators and instructors in higher education develop better policies that will provide a contribution to the improvement of educational achievement among college students. Administrators in higher education may use this study to better understand and connect with digital immigrants in the 21st Century. This study will provide an understanding of what college students' experiences are with cell phones. Knowledge and information on the frequency and extent to which cell phones are used in class and information on academic misconduct via cell phones can be obtained from this study. Administrators could use this study to develop more effective policies regarding the cell phone use.

This study could be used by practitioners at all levels of education to examine if the perceived opinions of cell phones and their use is universal among all learners. This study will help identify how college students use their cell phones, whether or not they bring their cell phones to class, and whether or not they use their cell phones while in class. If the findings of this study reveal that college students are bringing their cell phones to class and using them during classroom instruction, it could provide a basis for further research to examine ways in which cell phones might be integrated into the learning environment.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

This chapter provides a review of literature that is related to the use of cell phones in the classroom in order to develop a better understanding of perspectives regarding the use of cellphones in class.

Works that were published after 2007 were reviewed primarily because they were produced after Apple's revolutionary iPhone was introduced which drastically changed the way consumers use cell phones. Additionally, older published works that were cited by several authors were included as they are the basis of the theoretical frameworks on which much recent research regarding cell phones and their use in educational settings are premised. With the exception of work relating to theory, literature involving cell phone use in classrooms published prior to 2007 was excluded in search of obtaining recent research that would better reflect the current era. Variations of keywords such as "cell phones and texting in class", mobile technology in class", "cell phone use in class", "cell phone polling in class", "classroom etiquette of cell phones", and social etiquette of cell phones", were searched using Academic Search Complete and Academic Search Premier via Mississippi State University's online library. The Google Scholar database was also used for keyword searches.

The review of literature consists of three theoretical frameworks (theory of Student Involvement, Activity theory, and cognitive theory of multimedia learning) that relate to the

missions of colleges/universities and the use of cell phones into the classroom learning environment. The literature reveals three themes: student versus faculty, cell phone use in class and academic performance, and cell phone as learning tools. The chapter concludes with an analysis of how the research studies and themes are related.

The theory of Student Involvement is based on the amount of energy (psychological and physical) that students devote towards academic achievement. The mission of practically every college is focused on inspiring the minds of students not only through classroom instruction but also by creating an environment that pools people from different demographical backgrounds with the expectation that this unique environment will enrich the minds of students. Learning theory (constructivism) is similar to Student Involvement theory as it is student-centered and is primarily concerned with the active involvement of students adapting to new environments. Junco, Heiberger, et al., (2010) conducted an experimental study on the effects of using Twitter for educationally relevant purposes and found that it had a positive effect on student engagement for pre-health students enrolled in introductory level Biology and Chemistry courses.

Activity theory is a novel framework increasingly being used in recent years by researchers to examine educational systems for the utilization of information communication technology in teaching and learning activities (Engestrom, 2000). As it relates to cell phones in the classroom, activity theory identifies technology use that interferes with learning then uses that same technology to enrich the learning environment. Because the theory lends itself to environmental influences, the results of an investigation of cell phone usage in the classroom and the subsequent changes in classroom teaching practices will not be based purely upon observation of the students.

The Leisure Experience Battery was developed to assess the four dimensions (boredom, challenge, distress, and awareness) of person's perceptions and experiences (Caldwell, Smith, & Weissinger, 1992). The scale measures a person's (a) susceptibility to becoming bored during leisure time, (b) preference for challenges during leisure, (c) negative feelings that may occur during leisure, and (4) awareness of leisure resources and opportunities (Caldwell et al., 1992).

Cognitive theory of multimedia learning consists of three core principles: essential processing, incidental processing, and representation processing. Essential processing involves the intellectual functions necessary for understanding material as it is presented; incidental processing refers to the intellectual processes that are related to learning a task; and representational processing is premised on the intellectual processes that hold mental presentation in working memory over a period of time (Mayer & Moreno, 2003). Decision making abilities are adversely impacted when a high cognitive load is placed on an individual (Beilock & DeCaro, 2007). In other words, cognitive theory acknowledges the limitations of humans that make it difficult for learning to occur when interesting but irrelevant information is being presented in conjunction with necessary material. Junco (2012) define cognitive theory as a two channel – visual and auditory – processing system of the human brain that has two channels, each with a limited capacity for cognitive processing. Elder (2013) and Junco (2012) refer to cognitive theory as the Bottle Effect because cognitive processing speed and errors associated with multi-tasking are due to the capacity issues of working memory. The Bottle Effect is identified by Gingerich and Lineweaver (2014) as cognitive overload. Gingerich and Lineweaver (2014) conducted two experiments to examine the impact that sending text messages during class has on the ability of college students to comprehend lecture material.

10

In a study of non-academic internet use of college students during class, Ravizza, Hambrick, and Fenn (2014) found an inverse relationship between test grades and internet use during class. Additionally, Ravizza et al. (2014) found that the inverse relationship between test grades and internet use remained even when intellectual ability was taken into account. The key finding of Ravizza et al. (2014) is that non-academic use of the internet during class impeded college students' ability to learn regardless of intellectual ability.

Existing literature on cell phone use in the classroom examines the beliefs and perspectives of the effect that cell phone use in class has on academic performance and adapting cellphones for use as learning tools. Al-Emran, Elsherif, and Shaalan (2015) explored the attitudes towards multimedia technology that college students and instructors at five universities in the Arab Gulf region and found significant differences among students and instructors. Tindell and Bohlander (2012) found that students perceived instructors to be oblivious to their texting behavior. Students do not perceive cellphone use in classroom for nonacademic purposes to be a distraction, instructors believe that such use has a negative correlation with attentiveness (McDonald, 2013). Prensky (2001) maintains that students' perspectives of cellphones being used in class is almost always different from the instructor's perspective. There are societal influences and generational gaps that contribute to the difference in perspectives on cellphone use in class between students and instructors (Burns & Lohenry, 2010). The rationale in the literature of the inherent differences in perspectives between students and instructors is the result of value differences between digital immigrants and digital natives (Prensky, 2001). The millennial generation (digital natives) of students have grown up with electronic devices playing a major role in their lives while the older generation (digital immigrants) entered adulthood without modern technology being readily available.

11

Alexander Astin's student involvement theory describes the importance of student involvement in college by focusing on the behavior of students and how to motivate them (Astin, 1984). This theory explains the environmental influences that impact student development and embraces multiple principles of classic learning theory. It can be used by researchers as well as college administrators to aid in reducing inefficiencies in college learning environments. Using this theory, it can be argued that using cell phones during class must garner sufficient student effort and investment of energy in order to accomplish desired levels of learning and development.

The literature provided multiple findings on the impact and perception of cell phone use during classroom instruction. Texting is the primary source of communication among adolescents (Tulane & Beckert, 2013). Just under 97% of college students send and receive text messages during class (Tindell & Bohlander, 2012).

Age, gender and ethnicity are not predictors of student achievement (Amro, Mundy, & Kupczynski, 2015). Texting during class has a significant impact on grades (McDonald, 2013). Facebook is one of the top websites that students visit during class for non-academic reasons (Jackson, 2012). Students' perceptions of learning is different when texting is used as a learning tool (Swartzwelder, 2014).

The literature investigated perceptions of cell phones, cell phone etiquette, texting patterns among young adults, and student and teacher attitudes toward mobile learning in the classroom, and effective ways to utilize cell phones and web-based technologies to communicate with large classes. Reviewing the literature revealed three themes: perceptions of cell phones, cell phone use in class, and cell phones as learning tools.

Perceptions of Cell Phones

A recurring theme present in the literature involved comparisons between the perspectives of students and faculty on the use of cell phones in class. Chen and Bryer (2012) reported instructors believe that they facilitate informal learning by integrating social media into formal learning environments. Bryer and Chen (2010) surveyed a national sample of 57 public administration faculty using a semi-structured interviewing process. Their purpose was to investigate the educational use of social media technology. They found mixed attitudes among instructors towards the use of social media as a teaching tool. The findings among interviewees were that informal learning via social media should be optional in formal learning environments because informal learning gives instructors the ability to enable innovation and collaborative interactions, links textbook information with real-world problems, and facilitates constructive learning. The same study revealed that students' perspectives regarding the use of cell phones in class differs from that of instructors because of generational and demographical variables that exist between students and instructors. There are dissimilar perspectives when considering the use of cell phones and the perceived role or impact they may have in the classroom learning environment when they are used for nonacademic purposes. The favorable perspective of cell phone use in the classroom among students and the negative perception of their use by faculty recurs throughout the literature.

In their investigation of the use of cell phones in the classroom, Baker, Lusk, and Neuhauser (2012) sought to determine the perceptions of students and faculty members, whether perceptions regarding the use of cell phones differ between students and faculty members, and whether demographic characteristics have an effect on perceptions of the use of cell phone in the classroom. Baker et al. (2012) sent a 55 question survey that consisted of four sections to

students and faculty at three public universities located in New York, North Carolina, and Texas. The sample size of the study was 978 (882 students and 96 faculty). The study revealed three key findings: students consider the use of mobile devices during class to be more appropriate and less disruptive while faculty disagrees, female students perceived mobile devices to be more disruptive and less appropriate than did male students, and graduate students are less tolerant than undergraduate students of off task usage of mobile devices.

In an attempt to assess the extent that cell phones are used in college classrooms for nonacademic purposes, Tindell and Bohlander (2012) surveyed 269 college students across 21 academic majors using a Likert scale survey at a small northern university. They found that more than 90 percent of college students send and receive text messages during class and 30 percent of students do it every day. Additional findings indicate that classroom size has an impact on students' perceptions of whether the instructor is aware of their in-class texting practices. Larger classes make is easier for students to use their phones for nonacademic purposes without being noticed.

In a study of young women (high school and college students) in the southwestern region of the United States, Tulane and Beckert (2013) sought to discover the extent to which emerging adults view certain texting behaviors, the extent they engage in those behaviors, and how they differ by group membership. The survey consisted of 48 self-report questions related to texting and texting behaviors; the study had a 97% response rate. Results of the study revealed that 99 percent of college students and 90% of high school students have cell phones and nearly all of them use them to send and receive text messages. There were three categories of texting: light, medium, and heavy. High school students were more engaged in sending text messages than college students; moreover, high school students viewed texting during social interactions more

appropriate and acceptable than did college students. Among both groups, more than 77% of respondents indicated that they were clever enough to text during class without teachers being aware. These findings are consistent with Tindell and Bohlander (2012) who discovered that students view texting during class as an acceptable behavior.

An investigation of how college students perceive cell phone use, Emanuel (2013) surveyed 403 undergraduate students at small public university in the Southeast. The survey included 47 items that mostly consisted of Likert-type response options and explored five aspects of cell phones: ownership, general, use, in-class use, feelings and opinions, and perceived appropriate use. The study revealed that 91% of college students own a cell phone. The general use aspect of the survey disclosed that safety in an emergency, connecting with friends, work-related communication, entertainment, and tools/utility are the primary reasons why college students own cell phones. Sixty-eight percent of respondents indicated that text messaging is the cell phone feature they use the most. The classroom use aspect of the study indicated that 74% of college students send or receive text messages during class and more than half think there should not be any policies that prohibit such behavior. Talking on the phone in public places such as a grocery store or cafeteria was perceived as appropriate by more than 90 percent of respondents. Three-fourths of college students reported strong attitudes, feelings, and opinions indicating that they believe their cell phones helps them with time management (Emanuel, 2013).

A multi-section survey consisting of demographics, Leisure Experience Battery, a 10 item personality inventory, and questions about daily cell phone use was administered to a random sample of undergraduate college students at a large public university in the Midwest (Lepp, Li, et al., 2015). The purpose of the demographics section of the survey was to gather age, sex, undergraduate or graduate status, and number of credit hours students were currently

enrolled in. The Leisure Experience Battery portion of the survey was used to assess the susceptibility to leisure time boredom, preference for challenge during leisure, leisure distress, and leisure awareness of students. Questions about cell phone usage was to determine the amount of time students spend using their cell phones each day. The personality inventory was used to assess personality traits. There were 454 students who participated in the survey with an average age of 20 years. About 63% of participants were women. Lepp, Li, et al., (2015) categorized three clusters that emerged from the data as follows: High Use, Low Use Extravert, and Low Use Introvert. The findings revealed that (a) High Use students tended to be introverts and used their cell phones an average of 635 minutes each day, (b) Low Use Extraverts scored the highest on personality traits of extraversion, and (c) Low Use Introverts used their cellphones the least as scored below average on the personal inventory scale. These findings are indicative that personality impacts the frequency and duration that college students use their cell phones (Lepp, Li, et al., 2015).

Lipscomb, Totten, Cook, and Lesch (2007) conducted an exploratory study based on a convenience sample of 383 college students at four institutions of higher learning in Colorado, Connecticut, Louisiana, and North Dakota examined the attitudes that young adults have concerning cell phone etiquette and when they consider it appropriate to use cell phones in social settings. Participants in the study responded to 10 etiquette statements by indicating their level of agreement via a 5-pont Likert-type scale. The findings indicated that college students consider it inappropriate to use cell phones in environment where it would be a nuisance or disturbing to others. This perception was consistent across all four colleges which suggests that the codes of etiquette that govern cell phone behavior are universal among young adults (Lipscomb et al., 2007).

Harrison (2011) conducted a self-report study to quantify cell phone usage among young adults identify the extent to which they engage in texting while driving. Participants were recruited from a pool of Psychology students at a mid-sized college in the Northeast that has a substantial population of students who commute to campus daily. The sample was made up of 68 women and 35 men who had a combined mean age of 23 years. The findings revealed that the majority of respondents indicated that they perceive texting while driving to be dangerous; however, more than 91 percent reported that they send and receive text messages while driving.

Forgays et al., (2014) conducted an exploratory study that examined the role cell phones play in people's lives and the extent to which individuals rely on their cell phones. The study consisted of an online survey of 662 participants who were enrolled in college or has obtained a bachelor's degree. Women accounted for more than 70% of the study and 18-24 year old were the largest age group. The amount of communication with friends, family, and romantic partners was related to age with youngest participants exhibiting heavy reliance on text messaging and the use declining with age (Forgays et al., 2014).

Cell Phone use in Class

The literature described the effects that texting during class has on academic performance. Gingerich and Lineweaver (2014) conducted a longitudinal study on a group of students at Butler University to observe the effects of texting during a lecture on time management strategies. Between two experimental groups, a total of 123 people participated in this study. The results of the first experiment revealed empirical evidence that texting during class interferes with one's ability to comprehend in a classroom environment. The second experiment revealed that comprehension and retention are detrimentally affected by texting during class. Interpreting these results, Gingerich and Lineweaver (2014) suggest that "students

may not feel that their learning is impaired after text messaging during a lecture, but they may realize this impairment after attempting to retrieve the material later" (p. 46), which indicates that using cell phone during class for off topic purposes hinders students' ability to learn.

Ravizza et al. (2014) surveyed 196 students enrolled in an introductory level psychology class during the 2012 fall semester in order to assess the relationship between non-academic internet use during class and test scores. They created a 9-question survey to collect self-reported data and used exam scores to determine the impact that internet use for non-academic purposes during class has on classroom performance. Their findings revealed that non-academic internet use during class is negatively correlated with exam scores.

Froese et al. (2012) used both a survey to evaluate how much information students thought they would miss if they texted during class and an experiment to explore the actual loss of information. There were 693 surveys collected from students at seven colleges and universities during fall semester 2009. The survey collected self-reported data; the experiment was a simulated classroom that established the actual effects that texting has on quiz performance. Key findings of the study revealed that 90% of college students consider themselves to be avid cell phone users, 75% of college students carry their cell phone to class, and quiz scores are significantly lower when students text during class.

Junco, Heiberger, et al., (2010) conducted a semester-long experiment to determine if using Twitter for educationally relevant purposes will have an effect on grades and student engagement among college students. Data were gathered from a sample of 125 college students; there were 55 in the control group and 70 in the experimental group. A 19-item survey was used to quantify differences in engagement and grades. Junco, Heiberger, et al., (2010) discovered

18

that including Twitter in the classroom as a tool for discussion increased engagement among students and improved grades by a statistically significant margin.

McDonald (2013) conducted a study to determine if a correlation existed between texting in class and final grades. The study consisted of a convenience sample of 119 students enrolled in the three separate sections of an introductory social science course at a college in the Midwest. To elicit a variety of in-class texting behavior, each section was given different classroom texting policies. The first course had a strict no-texting policy, the second course had a policy that would reduce students' grades by 3% at the end of the semester for each time they were caught texting, and the third course did not have a texting policy; thus, serving as the control group. The key finding of this study revealed a strong correlation between increased texting behavior in class and lower test scores.

Goodwyn (2014) surveyed 137 English teachers in England in order gain knowledge on their reactions and thoughts about E-reading devices such The Kindle. He found that more than half of English teachers are aware of E-readers and would welcome the idea of being able to utilize E-readers in their classes particularly because of the simplicity with which reading material can be accessed.

Junco, Merson, et al., (2010) examined the patterns of cell phone use and ownership among college students to determine if gender, ethnicity, and income have an impact on frequency of use and likelihood of ownership. The study consisted of a 56-item survey that was sent to students at 4 large universities in the United States. A total of 4,491 students responded to the survey and had an average age of 23 years. The findings indicated significant differences in cell phone ownership and use by gender, race, and income. White female students were twice as likely to own a cell phone, income was inversely related with cell phone ownership, and being

female, black, or from families earning more than $100,000 annually positively predicted the amount of text messages that were sent each week (Junco, Merson, et al., 2010).

Baron and Campbell (2012) examined if gender patterns exist among attitudes toward using cell phones to communicate rather than in person. The cross-national study, which was conducted via online survey, consisted of a convenience sample of 2001 university students in Sweden, the United States, Italy, Japan, and Korea. The data revealed that females prefer talking over texting and during face-to-face encounters males considered it acceptable to answer calls or text others. A key implication from the study is that gender is just one variable that influences how young adults use cell phones.

Emanuel (2013) used a 47-question survey to gather information on how college students use and perceive cell phones at a historically black university in the Deep South. A total of 403 students completed the survey, 59% where female and 41% were male. The breakdown of participants in the study by class year is 42% freshman, 20% sophomores, 18% juniors, and 21% seniors. The survey explored five aspects of cell phones: cell phone ownership, general use, classroom use, perceptions of appropriate use, and general attitudes, feelings, and opinions about cell phones. Key findings reveal that most college students own a smartphone that is primarily used for texting, nearly three-fourths of students text during class, more than half of college students attempt to hide their cell phone use activity during class, and three-fourths of college students believe that their cell phone helps them make more efficient use of their time.

Lee et al. (2016) conducted a study that consisted of 1,236 college students (511 women and 725 men) from six universities in South Korea in order to investigate the relationship between smartphone dependency and anxiety. They used a 25-item closed-ended questionnaire and multiple logistic regression to determine association between smartphone dependency and

anxiety. Major findings of the study revealed the following: there are significant differences in smartphone patterns of use among genders with twice the percentage of women reporting that they use their smartphone for more than six hours each day; the most common use of smartphones among college students is for social networking services and more than half of the female college student used their smartphone for such purposes while less than 40 percent of male college students reported using their smartphone for social networking; and smartphone dependency has a positive correlation with daily use tendencies and women are more prone to smartphone dependency than men (Lee et al., 2016).

Chen, Liu, Ding, Ying, Wang, and Wen (2017) conducted a cross-sectional study that utilized the Smartphone Addiction Scale to gather demographic, smartphone use, and psycho-behavioral data on 1,441 undergraduate students at a medical school in China in order to investigate the prevalence of smartphone addiction among males and females. The findings of the study revealed that smartphone addiction is prevalent among about 30 percent of male and 29 percent of female college students; however, the factors associated with smartphone addiction varies between genders (Chen et al., 2017).

Cell Phones as Learning Tools

Communicating with large classes over 100 students can be difficult due the complications involved with provoking student commentary and providing a medium where thoughts, comments, and questions can be acknowledged. The third theme that arose from the literature was the potential of cell phones to be used as learning tools. Web-based computer software technology that combines internet and texting can be used to allow for polling and response systems to be integrated within classroom lectures providing results in real-time. These kinds of systems utilize the texting capabilities of cell phones to create a new channel of

communication between students and the instructor. Computer software that utilizes cell phones to facilitate student interaction in class is a resolution to the perennial problem of communicating with large classes of over 100 students (Kinsella, 2009). The opportunities for the integration of cellphones in the classroom as learning tools are endless. Educational researchers should continue to seek innovative techniques that are focused on the enrichment of classroom learning.

Voelkel and Bennett (2014) utilized a real-time polling system to support student engagement and feedback at a European university. A total of 992 students in four sections of a Biological Sciences theory module at the University of Liverpool were surveyed in order to examine students' views on in-class polling. The survey utilized Likert-scale questions to obtain satisfaction ratings. The findings revealed that students have a positive view of real-time polling being used during class and believed the use of real-time polling during class made lectures more interesting.

Kim, Ilon, and Altmann (2013) conducted a two part study to determine how technology enrichens the ability and quality of the classroom environment for collective learning. A total of 40 graduate students majoring in engineering and education at Seoul National University participated in a study that consisted of: (part one) a one-page questionnaire that was aimed at collecting information on the types of apps college students have on their cell phone and (part two) an interview to determine if students believed the apps could be used for learning. The study sought to understand what students define a learning app on a cell phone to be. Key findings revealed the most popular apps that students majoring in engineering and education in Korea used are dictionary and translation. Additionally, education students tended to use apps that had specific functions while engineering students had a propensity to choose apps that allow access to outside information and networks.

Research suggests that social media can play a role in improving student engagement both formally and informally (Cain & Policastri, 2011). As of the third quarter of 2018, Facebook had 1.49 billion daily active users (Facebook Inc., 2018). More than 90% of Facebook's daily users access the social media platform via mobile devices (Smith, 2017). Formal learning accounts for a small fraction of the lifelong experience of human learning; the use of social media as tools of learning may connect informal learning with traditional formalized methods of learning (Chen & Bryer, 2012).

Cain and Policastri (2011) utilized a Facebook group as part of their informal learning strategy in order to expose 128 third-year pharmacy students to contemporary topics in pharmacy management and leadership and provide the opportunity dialog experts in the field of pharmacy. They found that optional participation in the Facebook group was the primary element that enabled the informal learning environment.

Junco, Heiberger, et al., (2010) conducted a semester-long study to examine the causal link between the use of Twitter for educational purposes and student engagement with a sample of 125 first year seminar course students at an American university. They used a 19-item engagement questionnaire that utilized Likert-scale questions. Throughout the semester a total of 75 questions were proposed and 55 students were involved in the discussion indicating that student use of Twitter boosted participation in class discussions (Junco, Heiberger, et al., 2010) Twitter had a positive effect on student engagement when it was used as a method for students to ask questions. Their research suggests that Twitter can be used as a vehicle of engagement that will aid in fostering academic psychosocial development of students.

Liu, Navarrete, Maradieugue, and Wivagg (2014) conducted a two-year case study to investigate how iPod touch devices can be used as teaching and learning tools. The study

included four elementary and middle school English teachers and their students. The applications available for iPod touch devices provided students with a platform that provides instant access to resources and facilitates the acquisition of learning a new language (Liu et al., 2014).

Chapter Summary

College students are using their cell phones during class for nonacademic purposes (Tindell & Bohlander, 2012). The literature reveals that nonacademic cell phone use in the classroom is rampant and is a serious problem as it distracts students from learning.

The utilization of cellphones with classroom response systems provides a new perspective to the traditional ways in which cell phones have been used. It allows for an ease of communication between instructors and students in large college classrooms that can sometimes be comprised of several hundred students at major universities throughout the United States. The dynamics of learning differ between large classrooms and small classrooms; thus, teaching methods should evolve in order to address the demands that exist in modern classrooms as there are now numerous classes across college campuses that are made up of hundreds of students.

The results of the research repeatedly indicated that a negative relationship exists between texting during class and academic performance. Students who texted or used their cell phones for non-class related activities had lower grades. The literature reiterated the negative effects that texting during class has on academic performance. A significant decline in academic performance is a prevalent occurrence among students who text during classroom lecture (Dietz & Henrich, 2014). Lack of attention due to cell phone use only occurred when the devices were being used to perform tasks that were not related to classroom lecture.

Existing literature surrounding cell phone use in college classrooms is limited but provides a contribution of knowledge regarding student and faculty perspectives of cell phones during class, the impact cell phones can have on academic performance, and the potential for integration within the classroom as a learning tool. The literature examines student/faculty perceptions, impact of texting on academic performance, and potential for cellphones to be utilized for in-class polling. A major concern is the gap in the literature that fails to examine if differences exist between students' perceptions regarding cell phone use during class based on sex, gender, ethnicity, number of college credits earned, and community college experience of college students who attend universities in the Deep South. Future research could examine institutional policies that could have an impact on attitudes and perceptions among college students of cellphone use in the classroom.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

Introduction

This chapter provides an overview of the methods and procedures that were used to facilitate the study. Included in this chapter is a description of the research design, research questions, research site, population, instrumentation, data collection procedures, and plan for data analysis.

Research Design

This research study employed a quantitative, cross-sectional research design to explore the perceptions that college students have regarding the use of cell phones during class. Descriptive research analysis was selected for research questions one through five to provide a description of the participants in the study. The chi-square test for independence was used for research question six to test whether or not perceptions and experiences with cell phones vary among select demographic variables.

A survey, as described by Gall, Gall, and Borg (2007) is a "method of data collection using questionnaires or interviews to collect data from a sample that has been selected to represent a population to which findings of the data analysis can be generalized" (p. 230). Fraenkel, Wallen, and Hyun (2012) define descriptive surveys as ". . . asking the same set of questions (often prepared in the form of a written questionnaire) of a large number of individuals either by mail, by telephones, or in person" (p. 13). The purpose of this research study is to

explore the perceptions that college students have regarding the use of cell phones during class. Age, gender, race, community college experience, and class standing information was obtained in order to determine if the perceptions of cell phone use among college students differ by those variables. A questionnaire developed by Tindell and Bohlander (2012) was used to collect data for the study. Respondents were asked to report on their own use of cell phones in class and their observations of their peers' use of cell phones during class. In addition to basic demographic questions such as age, sex, and race, the questionnaire contains closed-ended questions ranging from 3 to 6 possible responses per item for statistical analysis.

Research Questions

The following six research questions lay the foundation for the basis of this research.

1. What are college students' general experiences with text messaging?

2. What are college students' observations of cell phone use by others in the classroom?

3. What are college students' practices of cell phone use in the classroom?

4. What are college students' perceptions regarding issues related to cell phone use in the classroom?

5. What are college students' perceptions regarding cell phone policies for class?

6. Do college students' perceptions of appropriate cell phone policies for class vary by select demographic variables (age, gender, class standing, ethnicity, and community college experience)?

Participants

A convenience sample of undergraduate and graduate students majoring in Political Science at a major public university in the Deep South is the target population of this study. Convenience sampling is a sampling procedure that is used for selecting subjects to study based on ease of accessibly, speed and low cost (Etikan, Musa, & Alkassim, 2016). Data were collected during the months of July and August of 2018. The Political Science department had 203 undergraduate and 61 graduates students enrolled during the 2017 fall semester (Office of Institutional Research and Effectiveness, 2017a). The racial characteristics of enrollment in the Political Science department during the fall 2017 semester were 71.67% White, 18.61% Black or African American , 3.37% Asian , 3.06% Hispanic, 1.75% Multiracial, 1.01% Race Unknown, less than 1% American Indian/Alaskan Indian, and less than 1% Native Hawaiian/Pacific Islander (Office of Institutional Research and Effectiveness, 2017b). Demographic characteristics of the sample were 67.44% White, 25.58% Black or African American, 4.65% Other, and 2.33% Hispanic.

Instrumentation

This study was conducted using a cross-sectional survey which collects information from a sample of a predetermined population. The survey instrument was used in this study is a modified version of a questionnaire developed and used by Tindell and Bohlander (2012). Tindell and Bohlander's research documented the percentage of students engaging in texting while in the classroom, perceived difficulty of texting without instructor's awareness, and perceptions of effective cell phone policies. The survey instrument was reviewed and approved by the Human Subjects Committee at Wilkes University (Tindell & Bohlander, 2012). The questionnaire contains 27 closed-ended multiple choice items and one open-ended item

28

(Appendix A). Tindell granted the researcher permission to use the questionnaire as a basis for collecting data for this study (Appendix B).

The questionnaire consists of five sections: Demographical Information, General Experiences with Text Messaging, Observation of the use of Cell Phones by Others, Students' own Use of Cell Phones in the Classroom, and Students' Opinion about Issues Related to Cell Phone Use in the Classroom. The 28-question instrument was administered to gather data on college students' perceptions on cell phone in class. Instructions for completing the questionnaire were provided with the instrument. This method of data collection was chosen because of the strengths associated with using this survey instrument to provide a description of the experiences of college students regarding cell phone use and measure perceptions of the study's participants with precision while maintaining anonymity of participants. The closed-ended items on the survey provided precise information related to the research questions. The open-ended item on the survey allowed participants to respond in their own words.

The organization of the questionnaire is displayed in Table 3.1. Included in the table is a description of the sections of that make up that make up the questionnaire and the survey items that each research question focuses on.

Table 1

Questionnaire Composition

Research Question	Description	Survey Item Number
	Informed consent	1

Table 1 (continued)

	Demographics	2-6
1	General Experiences with Text Messaging	7-10
2	Observation of use of Cell Phones	11-13
3	Own use of Cell Phones in class	14-19
4	Opinions about Issues Related to Cell Phones	20-24
5	Suggestions for Cell Phone Policies for Class	25-28

Questions 1 through 10 of the survey were intended to provide demographical information and basic information regarding cell phone use. Questions 11-27 on the survey have categorical response options and provided more detailed information of about cell phone use among college students. Question 28 on the survey is open-ended; the responses were used to provide context for the closed-ended questions.

Data Collection Procedures

Approval notice for study # IRB-18-163 was received from the Office of Research Compliance at Mississippi State University (Appendix C). The researcher utilized a self-report questionnaire to collect data. The questionnaire that was used in this study is an electronic online response instrument that contains 28 questions. In July 2018, a link to the questionnaire was emailed to the administrative assistant in the Political Science department who forwarded the email to undergraduate and graduate students in the department via the university's email platform Bully Mail (short for Bulldog) powered by Google. Participants responded to the questionnaire by following the link in the email. A reminder email was sent two weeks after the

initial email. A second reminder was sent in August 2018. Survey Monkey was used to administer the questionnaire and collect the data.

On average, it took respondents five minutes to complete the questionnaire. No phone calls or text messages were made to the target population. Participants were informed in writing that that their participation in the questionnaire was voluntary and that their responses were anonymous and confidential. A cover letter was included with the questionnaire explaining the purpose, procedures, and perceived benefits of the research (Appendix D).

Statistical Analysis

The Descriptive Statistics method was used to describe the data that were obtained to answer the following five research questions:

1. What are college students' general experiences with text messaging?

2. What are college students' observations of cell phone use by others in the classroom?

3. What are college students' practices of cell phone use in the classroom?

4. What are college students' perceptions regarding issues related to cell phone use in the classroom?

5. What are college students' perceptions regarding cell phone policies for class?

The descriptive statistics method of data analysis allows the researcher to report the percentages of college students' experiences with cell phones and provide a description of their responses.

Pearson's chi-squared statistical test was used to analyze the data that were obtained to answer research question six: Do college students' perceptions of appropriate cell phone policies for class vary by select demographic variables (gender, age, ethnicity, class standing, and

community college experience)? The chi-squared test is used on categorical data to evaluate the likelihood that any observed difference between two or more sets of data occurred by chance.

Chapter Summary

Chapter three provided the research design, instrumentation, data collection procedures, and data analysis procedures used in this study. This quantitative, cross-sectional research study included survey data from Political Science students at a large university in the Deep South. The researcher utilized a web based survey that collected self-report data from 43 respondents.

CHAPTER IV

FINDINGS

Introduction

This chapter presents the findings of survey research. The purpose of the study was to

explore the perceptions that college students have regarding the use of cell phones during class.

First, the demographic characteristics of participants are presented followed by frequency count

tables for research questions 1-5. The researcher imported responses into Statistical Package for

Social Sciences version 25 for Mac to conduct Pearson's chi-squared statistical test on research

question six. The results of the overall research findings are summarized.

Demographic Characteristics

The population of this study consisted of undergraduate and graduate students majoring

in Political Science at a large, public university in the Deep South. A total of 43 participants

responded (response rate of 16.28%) through SurveyMonkey to the electronic survey that was

emailed to them. The only item on the survey that did not have a 100 percent response rate was

the open-ended question at the end in which 13 participants did not provide a response. Table 2

displays frequency counts for selected variables including age, gender, ethnicity, and class

standing. The ages of participants ranged from 18 to 54 years. Age groups are broken down as

follows: 18-24 years, 25-34 years, 34-44 years, 45-54 years, and 55 years or older. Accounting

for 60.47% of participants, the 18-24 age group was the largest. The 25-34 age group represents

30.23% of participants. The 35-44 and 45-54 age group each accounted for 4.65% of

participants. There were no participants in the 55 years and older group. There was slightly more male participants (55.81%) than females (44.19%) who completed the survey. The most common ethnic/racial group was White which made up 67.44% of participants and Black or African American students accounted for 25.58% while Hispanics accounted for 2.65% and multiracial students made up 4.65% of responses. Percentages or respondents by Class standing are as follows: freshmen (16.28%), sophomore (11.63%), junior (20.93%), senior (27.9%), and graduate student (23.26%). More than half (58.14%) of participants indicated that they have taken classes at a community college.

Table 2

Frequency Counts for Selected Demographic Variables

Variable	Category	n	%
Age Group			
	18-24	26	60.47
	25-34	13	30.23
	35-44	2	4.65
	45-54	2	4.65
Gender			
	Female	24	55.81
	Male	19	44.91
Class Standing			
	Freshman	7	17.2
	Sophomore	5	82.8
	Junior	9	20.93
	Senior	12	27.90
	Graduate Student	10	23.26

Table 2 (continued)

Race/Ethnicity	African American/Black	11	25.58
	White	29	67.44
	Hispanic	1	2.33
	Other	2	4.65
Community College	Yes	25	58.14
Experience	No	18	41.86

(N = 43)

Research Question 1

Question 1: What are college students' general experiences with text messaging?

Survey items 7 through 10 of the survey instrument were used to examine research question 1. These items dealt with students' general experiences with text messaging. Data are reported in Table 3. All students (100%) own cell phones that can be used for sending and receiving text messages. The majority of students' (79.07%) primary method of sending message with their cell phone is via standard text messaging. Nearly all students (90.07%) take their cell phone to class every day. More than 88% of cell phones are set to vibrate when students are in class.

Table 3

Frequency Counts for General Experiences with Text Messaging

		Frequency	Percentage
Cell phone for texting			
	Yes	43	100
	No	0	0
Types of messages			
	Standard Text	34	79.07
	Email	4	9.30
	Facebook	1	2.33
	Pictures	4	9.30
Cell phone to class			
	Yes, always	39	90.70
	Yes, sometimes	3	6.98
	No, never	1	2.33
Cell phone status			
	Turned off	4	9.30
	Vibrate	38	88.37
	Set to Ring	1	2.33

(N = 43)

Research Question 2

What are college students' observations of cell phone use by others?

Survey items 11 through 13 of the survey were used to examine research question 2. The data are reported in Table 4. These items dealt with students' observation of cell phone use by their peers during class. Most students (83.72%) indicated they see other students sending text

messages every day or almost every day. More than half (51.16%) of students reported never noticing other students texting during exams. Another 27.91% of student indicated that once or twice they have noticed another student texting during an exam. Nearly three-fourths (74.42%) of students reported other students' phones go off during class occasionally or that they have been distracted once or twice by other students' cell phones during class.

Table 4

Frequency Counts for Students' Observations of Cell Phone use by others?

		Frequency	Percentage
Others texting during class			
	No, I have never noticed	1	2.33
	Yes, I have noticed this once or twice	1	2.33
	Yes, I have noticed this occasionally	5	11.62
	Yes, I notice this almost every day	18	41.86
	Yes, this happens every day	18	41.86
Others texting during exam			
	No, I have never noticed	22	51.16
	Yes, I have noticed this once or twice	12	27.91
	Yes, I have noticed this occasionally	4	9.30
	Yes, I notice this almost every day	3	6.98
	Yes, this happens every day	2	4.65

Table 4 (continued)

Others' phone going off

	No, I have never noticed	8	18.60
	Yes, I have noticed this once or twice	18	41.86
	Yes, I have noticed this occasionally	14	32.56
	Yes, I notice this almost every day	1	2.33
	Yes, this happens everyday	2	4.65

(N = 43)

Research Question 3

What are college students' practices of cell phone use in the classroom?

Survey items 14 through 19 of the survey were used to examine research question 3.

These items dealt with students' own use of cell phones during class. The data are reported in

Table 5. More than half (51.16%) of students reported that their phones has gone off in class

once or twice. Just over a third (34.88%) of student indicated that their phone has never gone off

in class even though they always bring it to class.

Table 5

Frequency Counts for Students Own use of Cell Phones

	Frequency	Percentage
Phone going off		
Never, because no phone to class	3	6.98
Never, but I have phone in class	15	34.88
	22	51.16
Once or twice	3	6.98
Occasionally		
Sent texts before class		
Never	2	4.65
Once or twice	2	4.65
Occasionally	12	27.91
Almost every day	7	16.28
Every day	20	46.51
Sent texts during class		
Never	2	4.65
Once or twice	9	20.93
Occasionally	12	37.21
Almost every day	7	16.28
Every day	20	20.93
Sent texts during exam		
Never	37	86.05
Once or twice	5	11.63
Occasionally	1	2.33
Sent texts to cheat during exam		
Never	40	93.02
Once or twice	1	2.33
Occasionally	1	2.33
Almost every test	1	2.33
Received texts to cheat during exam		
No, never	42	97.67
Yes, occasionally	1	2.33

(N = 43)

Research Question 4

What are college students' experiences with issues related to cell phone use in the classroom?

Survey items 20 through 24 of the survey were used to examine research question 4. These items dealt with students personal experiences with cell phones in class. The data are reported in Table 6. More than half of students (55.82%) reported that it is somewhat easy or very easy to text during class without the instructor being aware. Just over 20% of students indicated that it is neither easy nor difficult to text without about getting caught. The majority of students (86.05%) indicated that it is either somewhat easier or much easier to receive texts in class than it is to send texts. More than 65% of students reported that is somewhat difficult or very difficult to text during an exam without the instructor being aware. More than 80% of students indicated that it is easier to receive texts during an exam without the instructor being aware. Over 90% of students reported that large and very large classes are the easiest to text in without the instructor being aware.

Table 6

Frequency Counts for Students' Opinions about Issues Related to Cell Phones

	Frequency	Percentage
Texting without getting caught		
Very easy	12	27.91
Somewhat easy	12	27.91
Neither easy nor difficult	9	20.93
Somewhat difficult	8	18.60
Very difficult	2	4.65

Table 6 (continued)

Sending and receiving texts

	Much easier to send	1	2.33
	Somewhat easier to send	0	0
	Equally easy to send and receive	5	11.63
	Somewhat easier to receive	11	25.58
	Much easier to receive	26	60.47

Ease of texting during exam without getting caught

	Very easy	2	4.65
	Somewhat easy	6	13.95
	Neither easy nor difficult	7	16.28
	Somewhat difficult	15	34.88
	Very difficult	13	30.23

Easier to send or receive texts during an exam

	Much easier to send	0	0
	Somewhat easier to send	0	0
	Equally easy to send and receive	8	18.60
	Somewhat easier to receive	8	18.60
	Much easier to receive	27	62.79

When can you text without getting caught

	In no situations	1	1
	Very large classroom	26	60.47
	Large classroom	13	30.23
	Relatively small classroom	2	4.65
	Small classroom	1	2.33

What are college students' perceptions about cell phone policies for class?

Survey items 25 through 28 was used to examine research question 5. These items focused on students' opinions regarding the appropriateness of cell phone use during class. The data are reported in Table 7. All students agreed that cell phones should be allowed in class. The question of whether texting should be allowed during class yielded mixed results; however, nearly half (46.51%) indicated that it is never okay to text in class. More than half of students (55.81%) considered that an appropriate cell phone policy for class is to allow cell phones as long as they are set to vibrate or turned off. Another 37% of students agreed that an appropriate cell phone policy would be allowing students to text as long as it causes no distractions.

Table 7

Frequency Counts for Suggestions for Cell Phone Policies for Class

	Frequency	Percentage
Should cell phones be allowed in class		
Yes, always	11	25.68
Yes, if using calculator	3	6.98
Yes, but not during exams	17	39.53
Yes, if off or silenced	12	27.91
No, cell phones should not be allowed at all	0	0

Table 7 (continued)

Should texting be allowed in class

	Yes, anytime	2	4.65
	Yes, if it not disturbance	2	4.65
	Yes, for emergencies only	12	27.91
	Yes, for class discussion	7	16.28
	No, never okay to text in class	20	46.51

Policy for cell phones in class

	Cell phones must be turned off and placed on the desk in front of each student	2	4.65
	Cell phones may be kept on the student, but must be on vibrate or turned off	24	55.81
	Cell phones may be kept on the student, and may be left on ring, but not used	1	2.33
	Cell phones may be used to send text messages as long as it causes no distractions	16	37.21
	Cell phones are not permitted	0	0

Research Question 6

Do college students' perceptions of appropriate cell phone policies for class vary by select demographic variables (age, gender, ethnicity, class standing, and community college experience)?

43

Demographic information obtained from the survey was used to examine if perceptions of appropriate cell phone policies for class differ among college students based on select demographic variables.

Age is the first demographic variable that was examined. The sample consisted of 60% were 18-24 years of age, 30% were 25-34 years of age, 5% were 35-44 years of age, and 5% were 45-54 years of age. The frequencies cross tabulated in Table 8 show suggestive evidence that age might have an impact on what cell phone policies for class that college students consider appropriate X^2(9, N=43) =0.060, p > .05.

Eleven (42%) 18-24 year olds, three (23%) 25-34 year olds, and two (100%) 45-54 year old thought that an appropriate policy for cell phone use should allow students to send and receive text messages during class as long as it did not distract other students. Fourteen (26%) 18-24 year olds, nine (69%) 25-34 year olds, and one (50%) 35-44 year old believed that an appropriate policy for cell phones in class should allow students to have cell phones as long as the cell phones are set to vibrate or are turned off. One 25-34 year old and one 35-44 year old thought that the appropriate cell phone policy for class should require cell phones to be turned off and place on the desk in front of each student. One 18-24 year old student believed that it would be an appropriate policy to allow cell phones to be set to ring but not used during class. The observed differences were that the majority of students' perception of an appropriate cell phone policy for class was to either allow cell phone to be use as long as no distraction is caused or allow students to have their cell phones but as long as the cell phones are set to vibrate.

Table 8

Chi-square Output for Age

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.366[a]	9	.060
Likelihood Ratio	13.328	9	.148
Linear-by-Linear Association	.088	1	.767
N of Valid Cases	43		

Gender is the second demographic variable that was examined. The sample included 24 male and 19 female college students. As can be seen by the frequencies cross tabulated in Table 9, perceptions of appropriate cell phone policies for class did not differ by $X^2(3, N=43) =0.838$, *p* > .05.

Table 9

Chi-square Output for Gender

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.847[a]	3	.838
Likelihood Ratio	1.221	3	.748
Linear-by-Linear Association	.043	1	.835
N of Valid Cases	43		

Ethnicity is the third demographic variable that was examined. The sample included 11 African-Americans, 29 Whites, 1 Hispanic, and 2 participants who identified as Other. Below in

Table 10 are the cross tabulated frequencies which reveal that perceived appropriated cell phone policies for class differ by ethnicity X^2(9, N=43) =0.05, $p < .05$.

Thirteen (45%) Whites, two (18%) African-Americans, and one student who self-identified as Other (50%) thought that an appropriate policy for cell phone use should allow students to send and receive text messages during class as long as it did not distract other students. Sixteen (55%) Whites, seven (64%) African-Americans, and one (100%) Hispanic believed that an appropriate policy for cell phones in class should allow students to have cell phones as long as the cell phones are set to vibrate or are turned off. One White and one African-American thought that the appropriate cell phone policy for class should require cell phones to be turned off and place on the desk in front of each student. One student who self-identified as Other believed that it would be an appropriate policy to allow cell phones to be set to ring but not used during class. The observed differences were that the majority of African-American and nearly half of White students heavily favor a policy that allow students to have cell phones as long as the cell phones are set to vibrate or are turned off while nearly half (45%) of White students and 20% of African-American students supported a policy that would allow students to text during class.

Table 10

Chi-square Output for Ethnicity

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	23.672[a]	9	.005
Likelihood Ratio	10.787	9	.291

Table 10 (continued)

Linear-by-Linear Association	1.392	1	.238
N of Valid Cases	43		

Class standing is the fourth demographic variable that was examined. The sample consisted of 7 freshmen, 5 sophomores, 9 juniors, 12 seniors, and 10 graduate students. The frequencies cross tabulated in Table 11 reveal that no significant difference exists among class standing and appropriate cell phone polies for class $X^2(12, N=43) = .531, p > .05$.

Table 11

Chi-square Output for Class Standing

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.975[a]	12	.531
Likelihood Ratio	8.420	12	.752
Linear-by-Linear Association	.631	1	.427
N of Valid Cases	43		

Community college experience is the fifth demographic variable that was examined. The sample consisted of 25 students who had taken courses at a community college and 18 student who had not. The frequencies cross tabulated in Table 12 indicated that no real difference exists between community college experience and perceived appropriate cell phone policies for class $X^2(3, N=43) = .265, p > .05$.

Table 12

Chi-square Output for Community College Experience

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.966[a]	3	.265
Likelihood Ratio	4.428	3	.219
Linear-by-Linear Association	2.226	1	.136
N of Valid Cases	43		

Chapter Summary

Chapter 4 presented the results from the descriptive analysis used in the first five research questions and the results of the chi-squared analysis used on research question six. Research questions one through five were analyzed using descriptive statistics. This study used data from 43 students to explore the perceptions that college students have regarding the use of cell phones during class. Research questions one through five focused on identifying what colleges students' perceptions are regarding various uses of cell phones. Research question 6 focused on identifying if differences among perceptions varied among select demographics.

CHAPTER V

DISCUSSION AND CONCLUSIONS

Introduction

This chapter presents an overall summary of the study and provides findings,

conclusions, limitations, recommendations, and suggestions for future research. The first section

provides a summary of the study. The second section presents findings and a conclusion of the

study followed by a discussion of the results as it relates to the literature. The third section of the

chapter covers limitations, general recommendations, and recommendations for future research.

The purpose of the study was to explore the perceptions that college students have regarding the

use of cell phones during class. More specifically, this research intended to determine if

perceived appropriate policies for cell phone use differ among select demographics of college

students. This study utilized a survey to examine whether differences exist among the

demographic variables age, gender, ethnicity, class standing, and community college experience

and perception of appropriate cell phone policies for the classroom.

Summary

The first chapter of this study provided background information on cell phones and how

they have between ubiquitous in modern society. Some studies have examined ways in which

modern technology can be used within the classroom to augment traditional methods of

teachings. Other studies have found cell phone use during class to be an impediment to learning.

49

Chapter 1 established that the focus of this study would be premised on exploring what college students' perspectives are regarding the use of cell phones during class.

The following research questions guided the study:

1. What are college students' general experiences with text messaging?

2. What are college students' observations of cell phone use by others?

3. What are college students' practices of cell phone use in the classroom?

4. What are college students' experiences with issues related to cell phone use in the classroom?

5. What are college students' perceptions about cell phone policies for class?

6. Do college students' perceptions of appropriate cell phone policies for class vary by select demographic variables (age, gender, ethnicity, class standing, and community college experience)?

A theoretical framework provided a basis for the study. Alexander Astin's theory of Student Involvement describes the importance of student involvement in college and cognitive theory of multimedia learning which explains the core principles of digital learning are the two theories that guided this study. The Student Involvement theory explains the environmental influences that impact student developments and embraces multiple practices of classic learning theory. Cognitive theory of multimedia learning acknowledges the limitations of humans that make learning difficult when other interesting but irrelevant information is being presented in conjunction with necessary material.

Chapter 2 provided a review of the literature associated with the use of mobile devices in the classroom. Specifically, the literature review included research on non-academic internet use during class, student versus faculty perception of cell phone use during class, and cell phone use

as learning tools. The studies included in chapter two provided evidence that a) college students use their cell phones during class, b) nonacademic use of cell phones has an adverse effect on grades, and c) students and faculty opinions on cell phone use during class almost always differ.

Chapter 3 provided the research design, research questions, instrumentation, data collection procedures, and data analysis procedures used in this study. This quantitative, cross-sectional research study included data collected from undergraduate and graduate Political Science students at a public university in the Deep South. There were a total of 43 participants responded the online survey on SurveyMonkey via an email that was sent to the entire Political Science department.

Chapter 4 provided a presentation of the findings of the survey and the analysis of data. The data were organized and analyzed based on the six research questions that guided the study. Descriptive statistics were used to present the demographic characteristics. Tables were used to provide visualizations of the selected demographic variables age, gender, class standing, ethnicity, and community college experience.

Findings and Conclusions

The majority of the respondents were white (n=29, 67.4%) and were 19-24 years old (n=26, 60.47%). Additionally, the majority of the respondents were upperclassmen and graduate students (n=31, 72%). More than half of the student have taken classes at a community college (n=25, 58%).

The first research question focused on the general experiences that college students have with text messaging. All of the respondents (n=43, 100%) have cell phones that can be used for sending and receiving text messages. Standard text is most common way respondents send and receive messages (n=34, 79%). Nearly all respondents indicated that they always bring their cell

phone to class (*n*=39, 90.7%). Most of the respondents reported that their cell phone is set to vibrate when they are in class (*n*=38, 88%)

The findings from this study indicate that college students have their phones set to vibrate, use their phones while in class, and texting is the primary task students perform on cell phones during class. The literature contains studies that focused on the use of cell phones in class; however, few examined the capabilities of cell phones and the frequency that students take them to class. Support for the conclusion drawn from these findings can be found in the literature.

The second research question focused on students' observations of cell phones use by others. Respondents overwhelmingly indicated that they see other students texting during class daily or almost daily (*n*=36, 84%). Just over half of respondents reported that they have never seen other students texting during an exam (*n*=22, 51%). The majority of respondents indicated that they are occasionally distracted by another student's cell phone going off during class (*n*=32, 74%). The findings revealed that students noticed classmates using cell phones during class but rarely noticed classmates using cell phones during exams.

Research question three focused on students' own use of cell phones in class. About half of respondents indicated that their phone has accidentally gone off during class one or twice because they forgot to put it on vibrate or turn it off (*n*=22, 51%). Nearly all respondents reported that they text while waiting for class to begin and during class (*n*=41, 95%). The majority of respondents indicated that they have never texted during an exam (n=37, 86%). Nearly all indicate that they have never sent text messages during an exam to cheat (*n*=40, 93%). Almost all respondents reported that they have never received texts containing information about an exam during the exam (*n*=42, 97%).   The findings indicated that practically all students

reported sending texts before and during class but none of them reported using their cell phone to cheat during exams.

The fourth research question focused on opinions about issues related to cell phones. More than half of respondents indicated that it was very easy or somewhat easy to text without the instructor being aware (n=24, 56%). The majority of respondents reported that it is much easier or somewhat easier to receive text messages during class (n=37, 86%). More than half of respondents indicated that it is more difficult to send texts during an exam without the instructor being aware (n=28, 65%). The majority of respondents reported that it would easier to receive texts during and exam without the instructor being aware (n=35, 80%). Nearly all respondents indicated large classrooms are easier to text in without the instructor being aware (n=39, 91%). The findings revealed that the majority of students find it easy to text during class without the instructor being aware but find difficult to text during an exam without getting caught. Large classrooms are the easiest to text in without getting caught. Perhaps students believe that it the instructors are not aware of their texting habits because the instructor does not bring attention to the behavior.

The fifth research question sought suggestions for cell phone policies for the classroom. All of the respondents indicated that they think cell phones should be allowed in the classroom. Roughly one-fourth of respondents indicated that cell phones should always be allowed (n=11, 26%). More than a quarter of respondents thought cell phones should be allowed if turned off or on vibrate (n=12, 28%). A large portion of respondents indicated that they think cell phones should be allowed but not during exams (n=17, 40%). A small percentage of respondents thought that cell phones should only be allowed during class if they were using calculator or calendar functions (n=3, 7%). The findings revealed that all participants agree that cell phones

should be allowed in the class room but differences arose when determining the degree to which cell phones should be used during class. In general, students support policies that allow cell phones in class but agree that some rules should be in place to govern how cell phones are used in class. These findings are consistent with prior literature.

Research question six identified the strength of relationships among select demographics and perception of appropriate cell phone policies for class. Age, gender, ethnicity, class standing, and community college experience are the demographics that were compared against perception of appropriate cell phone policies for class. The chi-square analysis revealed that statistical differences in perceptions of appropriate cell phone policies for class were present in the ethnicity demographic and the age demographic. The differences were that the majority of African-Americans and nearly half of white students heavily favor policies that allow cell phones as long as they are set to vibrate or are turned off. The differences among age groups was that the 18-24 year olds primarily considered it appropriate to use cell phones as long as no distraction to others is cause while the 25-34 year olds were more in favor of cell phone being kept on vibrate and not used.

The findings of this study reveal that students generally think they should be allowed to use their cell phones during class. Additionally, students agree that policies to govern the use of cell phones during class are needed but the opinions varied among age and ethnic groups regarding the extent of the use of cell phones. This presents a solution to gaps in prior literature in relation to why students may not feel that they are not disconnected from classroom learning when they use their cell phones during class for nonacademic purposes. These findings are supportive of existing literature that examined the use of cell phone use in class. The review of the literature revealed that college students take their cell phones to class, use them while in

class, and do not believe that they are distracted from learning even when evidence shows that they are. Chen and Bryer (2012) found that students have a preference towards using cell phones during class. Baker, et al. (2012) examined the perceptions that college students and faculty have regarding the use of cell phones and discovered that students perceive the use of cell phones during class to be appropriate and undisruptive. Tindell and Bohlander (2012) found widespread use of cell phones during class among college students. Tulane and Beckert (2013) found that more than 99 percent of college students have cell phones that they consistently use to text during class and are clever enough to avoid being caught. Emanuel (2013) found that the majority of college students routinely text during class and oppose policies that would prohibit cell phones in class.

Limitations and Recommendations

A number a limitations exist within this study. The small sample size constrains the ability for the findings to be applicable to large populations. Additionally, more than 90% of the sample were either African American or White. This study utilized a survey instrument that was developed before cell phones became as technologically advanced as they are today. The study implied that age and ethnicity are the only demographic variables where differences in perceptions of appropriate policies for cell phones exist. This study relied upon self-reporting which assumes participants responded truthfully to the items on the survey. Perhaps there are additional factors that are beyond the scope of this study which impacted these results. The study was initially sent out before the school semester began and may have had an impact on the way participants responded since it likely would have several weeks since they were last in class.

The findings of this study revealed that perceptions of appropriate cell phone policies for class differ among certain demographic variables. Few studies have examined what college
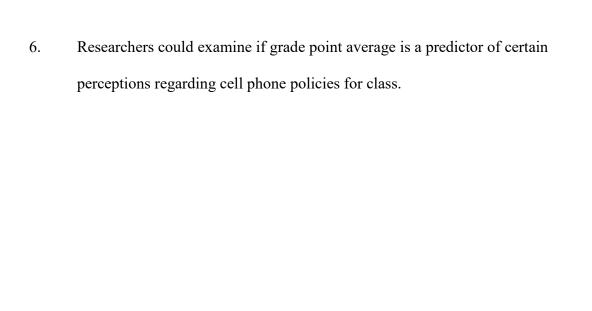
students' perceptions are regarding policies that govern their favorite gadgets. Based on the findings of this study, several recommendations can be made to administrators and teachers who are looking to develop more effective policies for the classroom.

1.   Administrators and teachers should examine why students use their cell phones so frequently during class.

2.   Administrators and teachers should move away from traditional teaching methods and explore options that could integrate the use of cell phones within formal learning environments.

Future Research

The findings revealed that 100% of students agree that cell phones should be allowed in the classroom but the extent to which cell phones should be allowed varied.

1.   Future research could study a larger sample of college students to determine if results found in this study are reflective of all college students.

2.   Researchers could replicate the current study using multiple universities and/or colleges without focusing on a particular academic discipline.

3.   More research could be conducted to identify potential ways for cell phones to be used in the classroom for educational purposes.

4.   Researchers could examine the frequency that college students use cell phones during class to access functions other than texting such as games and social media.

5.   Researchers could examine how college students' perceptions of various classroom policies change over time as the students matriculate through college.

6.   Researchers could examine if grade point average is a predictor of certain

perceptions regarding cell phone policies for class.

REFERENCES

Al-Emran, N., Elsherif, H.M., & Shaalan, K. (2015). Investigating attitudes towards the use of mobile learning in higher education. *Computers in Human Behavior 56,* 93-102

Amro, H.J., Mundy, M.-A., & Kupczynski, L. (2013). The effects of age and gender on student achievement in face-to-face and online college algebra classes. *Research in Higher Education Journal,* 25

Anjarwalla, T. (2010, July 9). Inventor of cell phone: We knew someday everybody would have one. CNN Retrieved from

http://www.cnn.com/2010/TECH/mobile/07/09/cooper.cell.phone.inventor/

Astin, A.W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25*(2), 297-308.

Baker, W.M., Lusk, E.J., & Neuhauser, K.L. (2012). On the use of cell phones and other electronic devices in the classroom: Evidence from a survey of faculty and students. *Journal of Education for Business, 87*(5), 275-289.

Baron, N.S., & Campbell, E.M. (2012). Gender and mobile phones in cross-national context. *Language Sciences 34*, 13-37.

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

Bryer, T., & Chen, B. (2010). Using social networks in teaching public administration. In C.

    Wankel, (Ed.) *Cutting-edge social medial approached to business education: Teaching*

    with LinkedIn, Facebook, Twitter, Second Life, and Blogs 241-268. Charlotte, NC:

    Information Age Publishing

Burns, S.M., & Lohenry, K. (2010). Cellular phone use in class: Implications for teaching and

    learning a pilot study. *College Student Journal, 44*(4), 805-810.

Cain, J., & Policastri, A. (2011). Using Facebook as an informal learning environment. *American*

    Journal of Pharmaceutical Education, 75(10), 1-207.

Caldwell, L.L., Smith, E.A., & Weissinger, E. (1992). Developments of a leisure experience

    battery for adolescents: parsimony, stability, and validity. *Journal of Leisure Research*

    24(4), 361-376

Chen, B., & Bryer, T. (2012). Investigating instructional strategies for using social media

    Informal and informal learning. *The International Review of Research in Open and*

    Distance Learning, 13(1), 87-100.

Chen, B., Liu, F., Ding, S., Ying, X., Wang, L., & Wen, Y. (2017) Gender differences in factors

    associated with smartphone addiction: a cross-sectional study among medical college

    students. *BMC Psychiatry 17,* Article ID 341.

Dahlstrom, E., & Bichsel, J. (2014). *ECAR study of undergraduate students and information*

    technology (research report). Louisville, CO: EDUCAUSE Center for Analysis and

    Research.

Dietz, S., & Henrich, C. (2014). Texting as a distraction to learning in college students.

    Computers in Human Behavior 36, 163-167.

Elder, A.D. (2013). College students' cell phone use and effects on their learning. *The College Student Journal, 47*(4), 585-592.

Emanuel, R.C. (2013). The American college Student cell phone survey. *College Student Journal 47*(1), 75-81.

Engestrom, Y. (2000). Activity theory as a framework for analyzing and redesigning work. *Journal of Ergonomics, 43*(7), 960-974.

Etikan, I., Musa, S.A., & Alkassim, R.S. (2016). Comparison of convenience sampling and purposive sample. *American Journal of Theoretical and Applied Statistics, 5*(1), 1-4.

Fischman, J. (2007). The campus in the palm of your hand. *Chronicle of Higher Education, 53*(36), 1-37.

Forgays, D.K., Hyman, I., & Schreiber, J. (2014). Texting everywhere for everything: Gender and age differences in cell phone etiquette and use. *Computers in Human Behavior, 31*, 314-321.

Fraenkel, J.R., Wallen, N.E., & Hyun, H.H. (2012). *How to design and evaluate research in education.* New York, NY: McGraw-Hill

Froese, A. D., Carpenter, C. N., Inman, D. A., Schooley, J. R., Barnes, R. B., Brecht, P. W., & Chacon, J. D. (2012). Effects of classroom cell phone use on expected and actual learning. *College Student Journal*, *46*(2), 323-332.

Gall, M.D., Gall, J.P., & Borg, W.R. (2007). *Educational research: An introduction.* Boston, MA: Allyn Bacon

Gingerich, A.C., & Lineweaver, T.T. (2014) OMG! Texting in class = u fail :(empirical evidence that text messaging during class disrupts comprehension. *Teaching of Psychology, 41*(1), 44-51

Goodwyn, A. (2014). Reading is now "cool": a study of English teachers' perspectives on e-

       reading devices as a challenge and an opportunity. *Educational Review, 66*(3), 263-275.

Harrison, M.A. (2011). College students' prevalence and perceptions of text messaging while

       driving. *Accident Analysis and Prevention, 43*(4), 1516-1520

Harrison, M.M., & Gilmore, A.L. (2012). U txt WHEN? College students' social contexts of text

       messaging. *The Social Science Journal, 49*(4), 513-518

Humes, J., & Raisner, J. (2010). *Constructivism in education technology*. Retrieved from

       http://edtech2.boisestate.edu/raisnerj/504/ConstructivismResearchpaper-

       HumesandRaisner.pdf

Jackson, L. D. (2012). Is mobile technology in the classroom a helpful tool or a distraction?: A

       report of university students' attitudes, usage practices, and suggestions for

       policies. *International Journal of Technology, Knowledge & Society*, *8*(5), 129-140.

Junco, R. (2012) In-class multitasking and academic performance. *Computers in Human*

       Behavior, 28(6), 2236-2243

Junco, R., Heiberger, G., & Loken, E. (2010). The effect of Twitter on college student

       engagement and grades. *Journal of Computer Assisted Learning*, *27*(2), 1-14.

Junco, R., Merson, D., & Salter, D.W. (2010). The effect of gender, ethnicity, and income on

       college students' use of communication technologies. *Cyberpsychology, Behavior, and*

       Social Networking, 13(6).

Kerris, N., & Dowling, S. (2007). *Apple reinvents the phone with iPhone*. Retrieved from

       http://www.apple.com/pr/library/2007/01/09Apple-Reinvents-the-Phone-with-

       iPhone.html

Kim, J., Ilon, L., & Altmann, J. (2013). Adapting smartphones as learning technology in a

    Korean university. *Journal of Integrated Design & Process Science*, *17*(1), 5-16.

Kinsella, S. (2009). Many to one: Using the mobile phone to interact with large classes. *British*

    Journal of Educational Technology, *40*(5), 956-958.

Lee, K.E., Kim, S.H., Ha, T.Y., Yoo, Y.M., Han, J.J., Jung, J.H. & Jang, J.Y. (2016).

    Dependency on smartphone use and its association with anxiety in Korea. *Public Health*

    Rep 131(3), 411-419

Lepp, A., Barkley, J.E., & Karpinski, A.C. (2015). The relationship between cell phone use and

    academic performance in a sample of U.S. college students. *SAGE Publications, 5*(1), 1-

    9.

Lepp, A., Li, J., Barkley, J.E., & Salehi-Esfani, S. (2015). Exploring the relationships between

    college students' cell phone use, personality and leisure. *Computers in Human Behavior,*

    43, 210-219.

Lipscomb, T.J., Totten, J.W., Cook, R.A, & Lesch, W. (2007). Cellular phone etiquette among

    college students. *International Journal of Consumer Studies, 31*(1), 46-56.

Liu, M., Navarrete, C.C., Maradiegue, E., & Wivagg, J. (2014). Mobile learning and English

    language learners: A case study of using iPod Touch as a teaching and learning tool.

    Journal of Interactive Learning Research, 25(3).

Mayer, R., & Moreno, R. (2003). Nine ways to reduce cognitive load in multimedia learning.

    Educational Psychologist, 38(1), 43–52.

McDonald, S.E. (2013). The effects and predictor value of in-class texting behavior on final

    course grades. *College Student Journal*, *47*(1), 34-40.

MobiThinking. (2011, July 7). *Global mobile statistics 2011: all quality mobile marketing research, mobile Web stats, subscribers, ad revenue, usage, trends.* Retrieved from https://mobiforge.com/research-analysis/global-mobile-statistics-2011-all-quality-mobile-marketing-research-mobile-web-stats-subscribers-ad

Office of Institutional Research and Effectiveness. (2017a). *Enrollment Data* Retrieved from http://www.ir.msstate.edu/enroll_college_dept_level_fa17.pdf

Office of Institutional Research and Effectiveness. (2017b). *Student Enrollment Profile.* Retrieved from http://www.ir.msstate.edu/enroll_profile17.pdf

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon, 9*(5), 1-2.

Ravizza, S.M., Hambrick, D.Z., & Fenn, K.M. (2014). Non-academic internet use in the classroom is negatively related to classroom learning regardless of intellectual ability. *Computers & Education, 78*, 109-114

Ray, A. (2015). The history and evolution of cell phones. *The Art Institute.* Retrieved from https://www.artinstitutes.edu/about/blog/the-history-and-evolution-of-cell-phones

Smith, C. (2017). By the numbers: 70 amazing Facebook mobile stats. *Digital Stats Articles.* Retrieved from: https://expandedramblings.com/index.php/facebook-mobile-app-statistics/

Swartzwelder, K. (2014). Examining the effect of texting on students' perceptions of learning. *Nursing Education Perspectives*, *35*(6), 405-407.

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.

Tison, J., Chaudhary, N., & Cosgrove, L. (2011). *National phone survey on distracted driving attitudes and behaviors.* (DOT HS 811 555). Washington, DC: National Highway Traffic Safety Administration

Tulane, S., & Beckert, T. E. (2013). Perceptions of texting: A comparison of female high school and college students. *North American Journal of Psychology*, *15*(2), 395-404.

Voelkel, S. & Bennett, D. (2014). New uses for a familiar technology: Introducing mobile phone polling in large classes. *Innovations in Education & Teaching International, 51*(1), 46-58.

Web Design Depot. (2009, May 22). *The evolution of cell phone design between 1983-2009.* Retrieved from https://www.webdesignerdepot.com/2009/05/the-evolution-of-cell-phone-design-between-1983-2009/

APPENDIX A

SURVEY INSTRUMENT

Survey Questions Related to Cell Phone Use

Informed Consent Form for Participation in Research
1. I agree to participate in this research study and am aware that my participation is voluntary.
   a) Yes
   b) No

Section 1: Demographical Information

INSTRUCTIONS: *Please click on the appropriate button*
2. What is your gender?
   a) Male
   b) Female

3. What is your age?
   a) 18-24 years old
   b) 25-34 years old
   c) 35-44 years old
   d) 45-54 years old
   e) 55 years or older

4. Please specify your ethnicity
   a) Black or African American
   b) White
   c) Hispanic
   d) Other

5. What is your class standing?
   a) Freshman
   b) Sophomore
   c) Junior
   d) Senior
   e) Graduate Student

6. Have you ever taken courses at a community college?
   a) Yes
   b) No

Section2: General Experiences with Text Messaging.
7. Do you have a cell phone that can be used for text messaging?
   a) Yes
   b) No

8. What types of messages have you sent with your phone?

a) I don't send any type of text message
b) Standard text
c) Email
d) Facebook
e) Twitter
f) Pictures (Instagram/Snapchat

9. Do you bring your cell phone to class?
   a) Yes, always,
   b) Yes, sometimes
   c) No, never

10. 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 vibrate
    c) My cell phone is set to ring

Section 3: Observation of the Use of Cell Phones by OTHERS.

11. Have you ever seen another student send or receive a text message while class is in session?
    a) No, I have never noticed this
    b) Yes, I have noticed this once or twice before
    c) Yes, I have noticed this occasionally
    d) Yes, I notice this almost every day
    e) Yes, this happens every day.

12. Have you ever seen another student send or receive a text message during an exam?
    a) No, I have never noticed this
    b) Yes, I have noticed this once or twice before
    c) Yes, I have noticed this occasionally
    d) Yes, I notice this almost every day
    e) Yes, this happens every day

13. Have you ever been distracted by another student's cell phone "going off" during class?
    a) No, this has never happened
    b) Yes, this has happened at once or twice
    c) Yes, this happens occasionally
    d) Yes, this happens almost every day
    e) Yes, this happens everyday

Section 4: Students' OWN Use of Cell Phones in the Classroom.

14. Has your cell phone ever "gone off" accidentally during a class because you forgot to put it on vibrate or turn it off?
    a) No, this has never happened because I never bring my cell phone to class.

b) No, this has never happened, even though I bring my cellphone to class.
c) Yes, this has happened once or twice.
d) Yes, this has happened at least a few times.
e) Yes, this happens frequently

15. Have you, yourself, ever sent or received a text message while waiting for class to begin?
   a) No, I have never done this
   b) Yes, I have done this once or twice before
   c) Yes, I have done this occasionally
   d) Yes, I do this almost every day
   e) Yes, I do this every day

16. Have you, yourself, ever sent or received a text message while class was in session?
   a) No, I have never done this
   b) Yes, I have done this once or twice before
   c) Yes, I have done this occasionally
   d) Yes, I do this almost every day
   e) Yes, I do this every day

17. Have you, yourself, ever sent or received a text message during an exam?
   a) No, I have never done this
   b) Yes, I have done this once or twice before
   c) Yes, I have done this occasionally
   d) Yes, I do this almost every test
   e) Yes, I do this every test

18. If you have SENT a text message during an exam, have you provided information about the exam to another student?
   a) No, I have never done this
   b) Yes, I have done this once or twice before
   c) Yes, I have done this occasionally
   d) Yes, I do this almost every test
   e) Yes, I do this every test

19. If you have RECEIVED a text message during an exam, have you received information about the exam from another student?
   a) No, I have never done this
   b) Yes, I have done this once or twice before
   c) Yes, I have done this occasionally
   d) Yes, I do this almost every test
   e) Yes, I do this every test

Section 5: Students' Opinion About Issues Related to Cell Phone Use in the Classroom.

20. How easy is it to send or receive a text message in class without the instructor being aware?
   a) Very easy
   b) Somewhat easy
   c) Neither easy nor difficult
   d) Somewhat difficult
   e) Very difficult

21. Is it easier to send or receive a text message in class?
   a) It is much easier to send
   b) It is somewhat easier to send
   c) It is equally easy to send and receive
   d) It is somewhat easier to receive
   e) It is much easier to receive

22. How easy would it be to send or receive a text message during an exam without the instructor being aware?
   a) Very easy
   b) Somewhat easy
   c) Neither easy nor difficult
   d) Somewhat difficult
   e) Very difficult

23. Would it be easier to send or receive a text message during an exam?
   a) It would be much easier to send
   b) It would be somewhat easier to send
   c) It would be equally easy to send and receive
   d) It would be somewhat easier to receive
   e) It would be much easier to receive

24. In which of the following situations do you think a student could text message without the instructor being aware?
   a) In no situations
   b) In a very large classroom (>100) only
   c) In a large classroom (>40) only
   d) In a relatively small classroom (<25)
   e) In a small classroom (<12)

25. Do you think cell phones should be allowed in the classroom?
   a) Yes, always
   b) Yes, if using functions such as the calculator or calendar
   c) Yes, but not during exams
   d) Yes, if turned off or on vibrate
   e) No, cell phones should not be allowed at all

26. Do you think that students should be allowed to text message during class?
    a) Yes, I should be allowed to send a text any time I want.
    b) Yes, I see no problems with using a cell phone to text in class as long as I am not disturbing any other students.
    c) Yes, but only in emergency situations (e.g., child care, or illness)
    d) Yes, but only if the message pertains to class discussion
    e) No, it is never okay to send a text message during class.

27. What do you think should be the policy on cell phone use during class?
    a) Cell phones must be turned off and placed on the desk in front of each student.
    b) Cell phones may be kept on the student, but must be on vibrate or turned off.
    c) Cell phones may be kept on the student, and may be left on ring, but not used.
    d) Cell phones may be used to send and receive text messages during class as long as this is not distracting other students or is not exam material.
    e) Cell phones are not permitted in the classroom under any circumstances.

28. Do you have any other ideas for a good policy on cell phone use? Please describe.
    a) What instructor characteristics make it easier to text message during his or her class? List as many as you think are important.
    b) What characteristics of the classroom layout make it easier to text message during class? List as many as you think are important.
    c) Please complete the following statement, "If college instructors only knew _ _ _ _ _ _ _ _ _ about text messaging in the classroom, they would be shocked."

APPENDIX B

PERMISSIONS

October 10, 2017

John Harper
103 Locksley Way
Apt 68
Starkville, MS 39759

Dear Dr. Tindell:

I am completing a doctoral dissertation at Mississippi State University entitled "College Students' Perceptions of Cellphone Use in Class." I would like your permission to use your survey questions related to cell phone use that you used in your 2012 study that assessed the extent to which cellphones and text messaging are used in the college classroom.

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.

The excerpts to be reproduced are:

Survey Questions Related to Cell Phone Use

Section 1: General Experience With Text Messaging

Do you have a cell phone that can be used for text messaging?

- yes
- no

What types of messages have you sent with your phone? (check all that apply)

- I don't send any type of text message
- standard text
- email
- Facebook/MySpace
- Twitter
- pictures

Do you bring your cell phone to class?

- yes, always
- yes, sometimes

- no, never

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

- my cell phone is turned off
- my cell phone is on vibrate
- my cell phone is set to ring

Section 2: Observation of the Use of Cell Phones by OTHERS.

Have you ever seen another student send or receive a text message while waiting for class to begin?

- no, I have never noticed this
- yes, I have noticed this once or twice before
- yes, I have noticed this occasionally
- yes, I notice this almost every day
- yes, this happens every day.

Have you ever seen another student send or receive a text message while class is in session?

- no, I have never noticed this
- yes, I have noticed this once or twice before
- yes, I have noticed this occasionally
- yes, I notice this almost every day
- yes, this happens every day.

Have you ever seen another student send or receive a text message during an exam?

- no, I have never noticed this
- yes, I have noticed this once or twice before
- yes, I have noticed this occasionally
- yes, I notice this almost every day
- yes, this happens every day.

Have you ever been distracted by another student's cell phone "going off" during class?

- No, this has never happened
- Yes, this has happened at least once.
- Yes, this happens frequently.

Section 3: Students' Own Use of a Cell Phone in the Classroom.

Has your cell phone ever "gone off" accidentally during a class because you forgot to put it on vibrate or turn it off?

- No, this has never happened because I never bring my cell phone to class.
- No, this has never happened, even though I bring my cell phone to class.
- Yes, this has happened once or twice.
- Yes, this has happened at least a few times.

Have you, yourself, ever sent or received a text message while waiting for class to begin?

- no, I have never done this
- yes, I have done this once or twice before
- yes, I have done this occasionally
- yes, I do this almost every day
- yes, I do this every day

Have you, yourself, ever sent or received a text message while class was in session?

- no, I have never done this
- yes, I have done this once or twice before
- yes, I have done this occasionally
- yes, I do this almost every day
- yes, I do this every day

Have you, yourself, ever sent or received a text message during an exam?

- no, I have never done this
- yes, I have done this once or twice before
- yes, I have done this occasionally
- yes, I do this almost every test
- yes, I do this every test

If you have SENT a text message during an exam, have you provided information about the exam to another student?

- Yes, but only once

- Yes, I have done this a few times
- Yes, I regularly do this during exams
- No, I have never done this

If you have RECEIVED a text message during an exam, have you received information about the exam from another student?

- Yes, but only once
- Yes, I have done this a few   times
- Yes, I regularly do this during exams
- No, I have never done this

Section 4: Students' opinion about issues related to cell phone use in the classroom.

How easy is it to send or receive a text message in class without the instructor being aware?

- very easy
- somewhat easy
- neither easy nor difficult
- somewhat difficult
- very difficult

Is it easier to send or receive a text message in class?

- easy in some classes; more difficult in others
- I don't know, because I don't try to send text messages, nor do I notice it in others.
- It is much easier to send
- It is somewhat easier to send
- It is equally easy to send and receive
- It is somewhat easier to receive
- It is much easier to receive
- I don't know

How easy would it be to send or receive a text message during an exam without the instructor being aware?

- very easy

- somewhat easy

- neither easy nor difficult

- somewhat difficult

- very difficult

- easy in some classes; more difficult in others

- I don't know, because I don't try to send text messages, nor do I notice it in others.

Would it be easier to send or receive a text message during an exam?

- It would be much easier to send

- It would be somewhat easier to send

- It would be equally easy to send and receive

- It would be somewhat easier to receive

- It would be much easier to receive

- I don't know

In which of the following situations do you think a student could text message without the instructor being aware? (check all that apply)

- In no situations

- In a very large classroom (>100) only

- In a large classroom (>40) only

- In a relatively small classroom (<25)

- In a small classroom (<12)

Do you think that text messaging causes any problems in the classroom? If so, please state what those problems are in the space below.

Do you think cell phones should be allowed in the classroom? (check all that apply)

- Yes, always

- Yes, if using functions such as the calculator or calendar

- Yes, but not during exams

- Yes, if on vibrate

- Yes, but only turned off

- No, cell phones should not be allowed at all

Do you think that students should be allowed to text message during class? {Check all that apply)

- Yes, I should be allowed to send a text any time I want.

- Yes, I see no problems with using a cell phone to text in class as long as I am not disturbing any other students.

- Yes, but only in emergency situations (e.g., child care, or illness)

- Yes, but only if the message pertains to class   discussion

- No, it is never okay to send a text message during class.

What do you think should be the policy on cell phone use during class?

- Cell phones must be turned off and placed on the desk in front of each student.

- Cell phones may be kept on the student, but must be turned off.

- Cell phones may be kept on the student, but must be placed on vibrate.

- Cell phones may be kept on the student, and may be left on ring, but not used..

- Cell phones may be used to send and receive text messages during class as long as this is not distracting other students or is not exam material.

- Cell phones are not permitted in the classroom under any circumstances.

The requested permission extends to any future revisions and editions of my dissertation, including non-exclusive world rights in all languages, and to the prospective publication of my dissertation by ProQuest Information and Learning (ProQuest) through its UMI® Dissertation Publishing business. ProQuest may produce and sell copies of my dissertation on demand and may make my dissertation available for free internet download at my request. These rights will in no way restrict republication of the material in any other form by you or by others authorized by you. Your signing of this letter will also confirm that you own the copyright to the above-described material, or that you otherwise have sufficient rights to the material in order to grant the requested   permission.

To grant this permission, please sign this letter where indicated below and return it to me in the enclosed return envelope. Please contact me should you have any questions or need additional information. Thank you very much.

Sincerely,

John Harper

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:

(For

(For companies)
[Name of company]

[Name of individual]   By: _____

Date: Title: _____

                                                      Date: _____

APPENDIX C

IRB APPROVAL LETTER

NOTICE OF DETERMINATION FROM THE HUMAN RESEARCH PROTECTION PROGRAM

DATE: June 26, 2018

TO: Linda Coats, Educational Leadership, Christopher Armstrong, Debra Prince, Stephanie King

PROTOCOL TITLE: College Students' Perceptions of Cell Phone Use in Class

PROTOCOL NUMBER: IRB-18-163

Approval Date: June 26, 2018   Expiration Date: June 25, 2023

EXEMPTION DETERMINATION

The review of your research study referenced above has been completed. The HRPP had

made an Exemption Determination as defined by 45 CFR 46.101(b)2. Based on this

determination, and in accordance with Federal Regulations, your research does not

require further oversight by the HRPP.

Employing best practices for Exempt studies are strongly encouraged such as adherence

to the ethical principles articulated in the Belmont Report, found at

www.hhs.gov/ohrp/regulations-and-policy/belmont-report/# as well as the MSU HRPP

Operations Manual, found at www.orc.msstate.edu/humansubjects. Additionally, to

protect the confidentiality of research participants, we encourage you to destroy private

information which can be linked to the identities of individuals as soon as it is reasonable

to do so.

Based on this determination, this study has been inactivated in our system. This means

that recruitment, enrollment, data collection, and/or data analysis **CAN** continue, yet

personnel and procedural amendments to this study are no longer required. **If at any**

point, however, the risk to participants increases, you must contact the

HRPP immediately. If you are unsure if your proposed change would

increase the risk, please call the HRPP office and they can guide you.

If this research is for a thesis or dissertation, this notification is your official

documentation that the HRPP has made this determination.

If you have any questions relating to the protection of human research participants, please

contact the HRPP Office at irb@research.msstate.edu. We wish you success in carrying

out your research project.

Review Type:	EXEMPT
IRB Number:	IORG0000467

APPENDIX D

COVER LETTER

Dear MSU Student,

My name is John Harper and I am a doctoral student in the department of Leadership and Foundations at Mississippi State University. I am conducting research to examine college students' perceptions of cell phone use in class. Your participation in this study will provide information on how college students perceive cell phones in class and how they are used.

The survey should take about 10 minutes to complete. You will be asked to respond to 27 multiple choice questions and 3 open-ended questions. If you would like to participate, please follow this link https://www.surveymonkey.com/r/MSSTATE_Cell_Phone_Survey. Your participation is voluntary. You may withdraw from the study at any time without penalty. Your responses will be kept completely confidential.

If you have any questions or need additional information related to this study please contact me, John Harper, at jnh148@msstate.edu or Dr. Linda Coats at LCoats@colled.msstate.edu

Thank you for your help. Your participation in this survey will be greatly appreciated and will play an important role in examining the perceptions that college students have about the use of cell phones in class.

Sincerely,

John Harper, Doctoral Candidate
Department of Leadership and Foundations