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Cell Phones in Minnesota High Schools: Principals' Perceptions of Impact and Policy

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Cell Phones in Minnesota High Schools: Principals' Perceptions of Impact and Policy

by

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Abstract

As cell phone use has become commonplace in society, school leaders have debated the positive and negative impacts of permitting cell phone use in schools (Kiema, 2015). In 2015, New York City public schools removed their cell phone ban for 1.1 million students (Allen, 2015). A reason for reversing the ban was that the policy had a disproportionate impact on low students who were more likely to have their cell phones confiscated because of metal detectors in the schools they attended (Allen, 2015). The New York City cell phone ban also proved extremely difficult to consistently and effectively enforce (Allen, 2015).

Students in France ages 15 years and younger were banned from bringing cell phones to school in 2018 (Busby, 2018). French Education Minister Jean-Michel Blanquer cited public health concerns over excessive screen time use and decreased socialization for children (Wamsley, 2017). Parent groups who opposed the ban pointed out the problems associated with keeping phones out of schools, such as equitably enforcing the policy and lack of parent support (Wamsley, 2017).

Research findings suggest banning cell phone use increases student achievement, for example a study of English public high schools found an improvement in student performance on standardized test scores in schools which banned the use of cell phones (Beland & Murphy, 2015). The study asserted that banning cell phones had the greatest impact on the academic performance of low-achieving students and no significant impact on the scores of higher achieving students (Beland & Murphy, 2015). Research is limited measuring the impacts of different types of cell phone use policies.

The conceptual framework of the study was derived from research conducted by Obringer and Coffey (2007) who surveyed high school principals in the United States designed to determine principals' perceptions of school cell phone policies, cell phone use by teachers and school safety issues involving the use of cell phones. The study replicated and, in some cases, modified survey questions from the Obringer and Coffey study in order to compare findings with the Obringer and Coffey study.

The purpose of the study was to determine Minnesota high school (Grades 9-12) principals' perceptions of the effectiveness of their school districts' cell phone policies and their perceptions of the impact of teacher and student cell phone use in the classroom on student learning. The results of the study are intended to be used to assist school principals and other policy makers in the formulation of policies regulating the use of cell phones in schools.

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Dedication

I dedicate this dissertation to the millions of students who are navigating the challenges of adolescence in the era of social media. It may be many years before we fully understand the impact of giving potentially addictive devices with all of the power and responsibility of the internet to cognitively developing teenagers. It is my hope that we as educators and parents take greater responsibility for the tremendous impact that technology accessibility has on young people.

Table of Contents

Chapter Page

Chapter Page

List of Tables

Table Page

Chapter I: Introduction

Introduction

School district leaders in the United States have attempted to reduce the negative impact of student use of cell phones during instructional time through written policies governing their use (Kiema, 2015). A 2007 study (Obringer & Coffey, 2007) found that 84% of United States school principals reported having a written cell phone policy in place. The study surveyed Minnesota principals to update findings on the 2007 study related to the existence and effectiveness of cell phone policies in Minnesota high schools.

A study of English public high schools found an improvement in student performance on standardized test scores in schools which banned the use of cell phones. The study asserted that banning cell phones had the greatest impact on the academic performance of low-achieving students and no significant impact on the scores of higher achieving students (Beland & Murphy, 2015). These findings contended that cell phone bans positively impact student learning.

In 2015, New York City public schools removed their cell phone ban for 1.1 million students (Allen, 2015). A reason for reversing the ban was that the policy had a disproportionate impact on low income students who were more likely to have their cell phones confiscated because of metal detectors in the schools they attended (Allen, 2015). These students needed their phones for safety reasons such as walking to and from school (Allen, 2015). The New York City cell phone ban also proved extremely difficult to consistently and effectively enforce (Allen, 2015).

Some schools and school districts have implemented a Bring Your Own Device (BYOD) policy permitting students to carry and use their personal electronic devices in school for

classroom purposes (Washington State School Directors' Association, 2018). Allowing students to connect personal electronic devices to a school provided internet source may have enabled cyberbullying on social media and other negative impacts (Chadband, 2012). The term PED (personal electronic device) has been used in school and school district technology policies and was defined as a portable electronic device that may be capable of the following features; connectivity to the internet, operating applications including social media and placing phone calls or text messages.

For example, the PED policy at Buffalo Community Middle School in Buffalo, Minnesota permitted teachers to grant student access to personal electronic devices as a learning tool during instructional time, but at other times, student's personal electronic devices must be turned off (Buffalo Community Middle School, 2018).

Some other schools and school districts have implemented one-to-one technology initiatives to improve student access to quality educational technology (Glossary of Education Reform, 2013). A one-to-one technology initiative is a program conducted by a school district to provide every student with access to a laptop or other portable device to be used for educational purposes (Glossary of Education Reform, 2013). As an example, Minnetonka Public Schools in Minnetonka, Minnesota provided iPads to students in grades 5-12 to be used for educational purposes (Minnetonka Public Schools, 2019). The school district's technology policy allowed for students to participate in the 1:1 iPad program or bring their own laptop or personal electronic device to school. An excerpt from the school district policy states:

> The District provides appropriate technology devices for learning when specific devices are required. Teachers may also permit, but not require, students to use personal electronic devices in support of learning, at the discretion of the teacher or other school staff. (Minnetonka Public Schools, 2015, p. 1)

Most teenagers in the United States have access to the internet and a cell phone (Lenhart, 2015). In 2015, the Pew Research Center reported 73% of teenagers have access to a smartphone and 91% of teenagers connect to the internet from a personal electronic device at least occasionally (Lenhart, 2015). Statista Incorporated (2015) found 95% of high school students in the United States have access to Wi-Fi while they are at school. Many students do not believe themselves to have the capacity to limit their cell phone use at school. According to a nationwide telephone survey, 50% of teenagers feel addicted to their devices, 72% feel they must immediately respond to messages and 52% feel they spend too much time on their phones (Common Sense Media, 2016).

A survey of high school principals in the United States found that 94% of principals perceived that teachers used their cell phones for reasons other than school related business. However, only 22% of principals perceived that direct instructional time was lost due to cell phone use, and 31% believed that the attention of the teacher was adversely affected due to the use of a cell phone (Obringer & Coffey, 2007). The majority of high schools in the United States (78%) allow teachers to carry and use cell phones during the workday (Obringer & Coffey, 2007).

Research indicated that cell phone ownership among adults in the United States is rising (Pew Research Center, 2018). The percentage of adults who own cell phones has steadily increased over time from 62% in 2002 to 95% in 2016 (Pew Research Center, 2018). Smartphone use among adults has also increased from 35% in 2011 to 77% in 2016 (Pew Research Center, 2018). As cell phone rates continue to escalate, high school principals in the United States believe that teachers use cell phones for non-school related purposes, however the

majority believe cell phone use does not impact a teacher's focus on their students and class (Obringer & Coffey, 2007). School employee policies regulate teachers' use of devices, but data on the effectiveness of different types of policies is limited. Further research is needed to understand the impact of cell phone use by teachers on student learning.

Conceptual Framework of the Study

The conceptual framework of the study was derived from research conducted by Obringer and Coffey (2007). In the study *Cell Phones in American High Schools: A National Survey,* Obringer and Coffey surveyed high school principals in the United States utilizing a 19-item survey designed to research school cell phone policies, cell phone use by teachers and school safety issues involving the use of cell phones. The following conclusions were reached based on the results of the survey:

- Almost all schools/districts have a written policy regarding cell phones; however, these policies primarily address students' use of cell phones. As cell phone features increase (e.g., storing documents on them), the policy will likely need to be revisited.
- Almost all schools permit cell phone use by teachers. This is potentially problematic in that many companies (e.g., Microsoft) are either banning or putting significant restrictions on employee's use of a cell phone during working hours.
- Perhaps the most common feature of school cell phone policies is that students are prohibited from using the devices at school, and in some cases even bringing cell phones to schools is strictly disallowed.
- Responding principals believed that teachers used cell phones for purposes other than school-related business.

- Responding principals believed that instructional time is not lost because of teachers' use of cellphones. (p. 44)

The study replicated and, in some cases, modified survey questions from the Obringer and Coffey study in order to compare findings with the Obringer and Coffey (2007) study. A modified survey developed by the researcher was provided to respondents with multiple choice options that differ minimally from the Obringer and Coffey study because, contemporary technology was used.

Statement of the Problem

Cell phone technology has advanced greatly in recent years. PED's such as cell phones, tablets and other mobile and wearable devices now seamlessly connect to internet sources at homes, schools, businesses and other community locations. Cell phone use among teenagers has become commonplace (Lenhart, 2015) and continues to increase among adults (Pew Research Center, 2018).

The use of a cell phone or other personal electronic devices has a varied impact on the user. One such impact is divided attention. Consuming multiple sources of information has been found in some studies to have a negative impact on learning new information and making decisions (Tombu et al., 2011). The Tombu study findings imply teacher use of a cell phone during instructional time could negatively impact instruction and student learning.

A 2007 study by Obringer and Coffey found that 22% of high school principals in the United States perceived that direct instructional time was lost due to teacher cell phone use in the classroom, and 31% believed that the attention of the teacher was adversely affected due to the

use of a cell phone. Principals' perceptions of teachers use of cell phones and the impacts on student learning have not been measured since the Obringer and Coffey study (2007).

Purpose of the Study

The purpose of the study was to determine Minnesota high school (grades 9-12) principals' perceptions of the effectiveness of their school districts' cell phone policies and their perceptions of the impact of teacher and student cell phone use in the classroom on student learning. The results of the study will be compared to the findings of an original study conducted by Obringer and Coffey (2007), from which the study was replicated. The results of the study are intended to be used to assist school principals and other policy makers in the formulation of policies regulating the use of cell phones in schools.

Objectives of the Study

The objectives of the study were as follows:

- Determine principal perceived effectiveness of cell phone policies in Minnesota high schools.
- Determine principal perceptions of the impact of high school teacher and student use of cell phones on student learning by high school teachers and students.

Assumptions of the Study

The following were assumptions of the study:

- High school teachers in the state of Minnesota use cell phones at a rate consistent with other adults in the United States of America.
- High school teachers in the state of Minnesota use their cell phones for non-work related purposes at a rate consistent with other adults in the United States of America.

- Cyberslacking (see definition of terms) by teachers during instructional time negatively impacts student learning.
- High school students in the state of Minnesota use cell phones at a rate consistent with other teenagers in the United States of America.
- High school students in the state of Minnesota use their cell phones for non-school related purposes at a rate consistent with teenagers in the United States of America.
- Survey participants answered survey items truthfully.
- Cell phones are owned by teachers and students in every high school in Minnesota.

Delimitations of the Study

Simon defined delimitations in research as "those characteristics that limit the scope and define the boundaries of your study" (Simon, 2011). The researcher delimited the study to a survey of only grade 9-12 high school principals in all regions of the state of Minnesota. The original Obringer and Coffey study (2007) was limited to high schools in all 50 states in the United States of America.

Research Questions

The following research questions are addressed in the study:

1. How did Minnesota high school principals perceive the effectiveness of their school districts' policies on teacher use of cellphones in their schools?
2. How did Minnesota high school principals perceive the effectiveness of their school districts' policies on student use of cellphones in their schools?
3. How did Minnesota high school principals perceive the impact of teachers' use of their cell phones on student learning?

4. How did Minnesota high school principals perceive the impact of students' use of their cell phones on student learning?

Definition of the Terms

1:1 Initiative: A program conducted by a school district to provide every student with accessibility to a laptop or other portable technology device to be used for educational purposes (Glossary of Education Reform, 2013).

Bring Your Own Device (BYOD) policy: A school policy permitting students to bring cell phones and other personal electronic devices into school with specific regulations on their use (Washington State School Directors' Association, 2018).

Cell Phone: A portable telephone capable of making and receiving telephone calls, with additional functionality beyond a traditional landline telephone (Business Dictionary, n.d.).

Cyberslacking: An employee using the internet for non-work-related purposes during work hours, including connecting through a personal electronic device (Vitak, Crouse, & LaRose, 2011).

High school principal: For the purpose of the study, defined as a head or assistant high school administrator who works primarily in a school with students in Grades 9 through 12 or 10 through 12.

Personal Electronic Device (PED's): A portable electronic device that may be capable of communication and other utility, such as a smartphone (Federal Aviation Administration, 2013).

Smartphone: A cellular phone that has the capability of connecting to the internet and other similar capabilities as a personal computer, in addition to placing phone calls (PC Magazine, 2018).

Tablet: A wireless portable personal computer with a touchscreen interface (Tech Target, 2018)

Summary

Obringer and Coffey (2007) surveyed high school principals in the United States regarding their perceptions of school cell phone policies and cell phone use by teachers and students. Since the time of that study, cell phone technology and school policies have changed, and students who did not have technology access now have and use cell phones and other personal electronic devices that can connect to school provided internet sources.

The study summarized Minnesota high school principals' perceptions of the degree of effectiveness of school districts cell phone policies and the impact of teacher and student cell phone use on student learning. The findings of the study were compared to those of the original Obringer and Coffey (2007) study to ascertain changes that have occurred between 2007 and 2018. Examining school policies and quantifying principals' perceptions of the impact of teacher cell phone use on students' learning may assist high school principals and school district policy makers to design more effective cell phone policies in high schools for the benefit of students.

Chapter II: Review of Related Literature

Introduction

The review of literature examined research related to the impact of student and teacher cell phone use in the classroom on student learning. The first section of the review of related literature focused on the impact of cell phone use by students and the impact of cell phone use by teachers on student learning. The second section focused on school technology policies that regulate the use of cell phones in schools. The third section examined the use of cell phones and other personal electronic devices in schools as a learning tool. The use of personal electronic devices including school issued devices was included in section three of the literature review because of the common functionality and utilization as a learning tool between cell phones and other personal electronic devices.

Impact of Cell Phone Use

Cell Phone Use by Students

Student cell phone use in schools has been linked to both positive and negative effects on student learning. Positive impacts included the use of cell phones by students to quickly perform internet searches for research purposes, access apps that can be utilized for research and presentations, using their smartphone as a calculator and sharing opinions beyond the classroom (Kowalski, 2016). Cell phones have been used to access school district supported collaboration apps; for example, Google Docs and Google Drive, which some teachers indicated can be accessed by students quicker and easier than on school issued devices such as laptops and tablets (Walker, 2016). Additional research related to the use of cell phones as learning tools in the classroom is located in the third section of this literature review.

Research has also demonstrated the negative impact of cell phone use by students on student learning during class. For example, a study allowed students to send and receive messages from their cell phone during a video lecture, while a control group was not permitted to do so. The control group earned a 10-17% higher grade, scored 70% higher on recalling information and 50% higher on note-taking than did those who were allowed to use their cell phone during class (Kuznekoff, Munz, & Titsworth, 2015). The Kuznekoff et al. findings demonstrated that permitting students to use cell phones during instruction negatively impacted student learning.

Cell phone overuse has been linked to a decrease in grade point average and an increase in anxiety among undergraduate college students (Lepp, Barkley, & Karpinski, 2014). Lepp et al. (2014) surveyed 536 undergraduate college students regarding their cell phone use habits and compared the results to each students' grade point average (GPA) and psychological impacts. Their findings include high frequency cell phone use was negatively related to GPA and positively related to anxiety. Students who reported high cell phone use earned lower GPA and reported higher anxiety. These students also reported lower satisfaction with life compared to their peers who used cell phones less frequently.

Some researchers believed that consuming multiple forms of information has a negative impact on the brain's ability to focus and learn (Tombu et al., 2011). Tombu et al. (2011) referred to the phenomenon within the brain as information "bottlenecks" and its impact on mental performance. Tombu et al. conducted brain scans of experiment participants as they performed cognitive tasks. The results indicated that dividing attention limited the ability of the brain to encode information and make decisions, negatively impacting learning.

Students who consume multiple forms of media more frequently than their peers may have a more difficult time alternating among tasks (Ophir, Nass, & Wagner, 2009). Researchers compared the response times of participants in groups with distractors and those without distractors. The group of participants identified as "heavy media multitaskers" based on a survey were more easily distracted by stimuli and performed worse at alternating tasks compared to the group of "light media multitaskers" (Ophir et al., 2009). The Ophir et al. (2009) findings concluded that students who consumed large amounts of media, including on a cell phone, were more easily distracted and struggled to change between tasks.

According to a survey of college students, students who used technology to multitask during instruction in class demonstrated lower academic performance and spent more time studying outside of class to compensate, despite that students believed they were multitasking effectively (Bellur, Nowak, & Hull, 2015). The findings of that study indicated that students may not have the self-awareness to understand the negative impact that cell phones have on their learning.

The term "locus of control" is a psychological term meaning the degree to which an individual believes he or she has control over the events in his or her life (Rotter, Seeman, & Liverant, 1962). An internal locus of control indicates the individual believes he or she has the power to control his or her destiny while an external locus indicates the belief that events are out of one's control (Rotter et al., 1962). A study of midwestern United States college students found an increase of sleep quality, GPA and life satisfaction as the locus of control became internal (Li, Lepp, & Barkley, 2015). Students were given validated surveys to determine if their locus of control was internal or external. Students who reported greater control of their cell phone use

showed an improvement in GPA while students who indicated less control of their cell phone use experienced negative outcomes, including becoming distracted in class, a decrease in GPA and sleeping less (Li et al., 2015).

According to a nationwide telephone survey, 50% of teenagers feel addicted to their devices, 72% feel they must immediately respond to messages and 52% feel they spend too much time on their phones (Common Sense Media, 2016). One third of teenagers attempt to reduce the amount of time that they spend on their device. Their survey results indicated that half of teenagers do not have the ability to regulate their own PED use (Common Sense Media, 2016).

Cell phone use among teenagers is commonplace as demonstrated by a 2015 Pew Research Center (Lenhart, 2015) survey that indicated 73% of teenagers have access to a smartphone and 91% of teenagers connect to the internet from a personal electronic device at least occasionally. Statista Incorporated (2015) found 95% of high school students in the United States have access to Wi-Fi while they are at school. A 2015 study conducted by the Pew Research Center (Lenhart, 2015) found 92% of teens were online every day, 24% of teens used the Internet “almost constantly” and 71% of teens use multiple social media sites. Teenagers send approximately 30 (median) text messages per day. Lenhart wrote that these statistics are influenced by the widespread availability of personal electronic devices, including cell phones (Lenhart, 2015).

Cell Phone Use by Teachers

Obringer and Coffey (2007) surveyed United States high school principals and discovered that 22% of principals perceived that direct instructional time was lost due to teacher

cell phone use. The use of a cell phone during instructional time by a teacher would be classified as cyberslacking. Cyberslacking is defined as an employee using the internet, including connecting through a personal electronic device for non-work-related purposes during work hours (Vitak et al., 2011). Surveys administered in 2005 and 2006 showed that 61% of United States employees engaged in some level of cyberslacking and the average employee spent 24% of their time at work engaged in cyberslacking (Lim & Chen, 2012). Employees generally feel that cyberslacking is acceptable in some form (Lim & Chen, 2012). Limited research was found on the impact of teacher cell phone use on student learning.

The percentage of adults that who own cell phones has been steadily increasing over time from 62% in 2002 (Pew Research Center, 2018). Surveys conducted in 2016 indicated 95% of United States adults own a cell phone of some kind (Pew Research Center, 2018). Smartphone use among adults has also steadily increased. In 2011, 35% of adults in the United States owned a smartphone. Surveys conducted in November of 2016 indicated that 77% of adults own a smartphone (Pew Research Center, 2018). There are no known studies quantifying teacher cell phone usage during instructional time.

School Cell Phone Policies

Cell Phone Bans in Schools

Educators do not agree on the impact of student cell phone bans in schools (Kiema, 2015). Proponents of banning cell phones in schools believed the potential benefits of cell phones are outweighed by concerns of negatively impacted student learning, cheating, cyberbullying, sexting and the distraction posed to teachers and students (Kiema, 2015). These claims were supported by a study of English high schools that indicated implementing a cell

phone ban increased student achievement (Beland & Murphy, 2015). A study of public high schools in four English cities surveyed head teachers about their school's cell phone policies and compared the results to student standardized test data. The researchers discovered an improvement in student performance on standardized test scores in schools after implementing a cell phone ban (Beland & Murphy, 2015). According to the same study, cell phone bans have very different effects on different types of students. Banning cell phones has the greatest impact on the academic performance of low-achieving students and had no significant impact on the standardized test scores of high achieving students.

Students in France ages 15 years and younger were banned by the French educational code from bringing cell phones to school as they returned to school in 2018, according to French Education Minister Jean-Michel Blanquer (Busby, 2018). Blanquer cited public health concerns over excessive screen time use and decreased socialization for children (Wamsley, 2017). Parent groups who opposed the ban pointed out the problems associated with keeping phones out of schools, such as equitably enforcing the policy and lack of parent support (Wamsley, 2017).

Opponents of cell phone bans cite the benefits of using cell phones as learning tools and question the feasibility banning cell phones (Kiema, 2015). Some teachers believe they would spend valuable classroom instructional time implementing the cell phone ban instead of focusing on student instruction (Walker, 2016). According to Liz Kolb, assistant professor at the University of Michigan School of Education, almost 70% of the schools that were implementing cell phone bans in 2010, had reversed those bans by 2015, many being replaced by BYOD (Bring Your Own Device) policies (Kiema, 2015). Kolb stated that these rollbacks are driven by

parents who wish to be able to connect with their children throughout the school day (Walker, 2016).

New York City public schools implemented a cell phone ban policy in 2006 affecting 1.1 million students. The ban was removed in 2015. (Allen, 2015). The policy change gave principals the decision-making authority to create policies that were appropriate for their school. The reasons cited by Mayor Bill de Blasio for ending the ban included safety concerns and the inequity caused by the ban being more heavily enforced in low socioeconomic schools that featured metal detectors at school entrances (Allen, 2015). The review of literature indicated that safety and equity were important considerations in the creation of school technology and PED policies.

BYOD Policies in Schools

Nearly 70 % of the school wide cell phone bans in 2010 were reversed by 2015, as many were replaced by BYOD (Bring Your Own Device) policies (Kiema, 2015). BYOD policies allow students to use their personal electronic devices to connect to school internet sources for educational purposes during class (Chadband, 2012). Some school district officials in school districts where BYOD policies have been successfully implemented, indicated that the policy was the best and only option for students to use PED's in the classroom, due to financial constraints (Chadband, 2012). A school district in Ohio saved 1.2 million dollars implementing a BYOD initiative in 2010 by utilizing the following 10-step process: community engagement; develop a team; develop the physical infrastructure; develop the software infrastructure; develop a portal; develop an acceptable use policy; build the curriculum; consider which personal electronic devices; monitor usage and develop frequently asked question and answers (Walsh,

2012). Schools implementing BYOD policies should educate students on how to use PED's safely and responsibly as well as train teachers on teaching techniques that utilize PED's in the classroom (Chadband, 2012).

Personal Electronic Devices as a Learning Tool

Cell Phones as a Learning Tool

Schools in the United States have permitted cell phones in the classroom by implementing Bring Your Own Device (BYOD) policies that permit students to use their personal electronic devices during class as learning tools (Kiema, 2015). The Pew Research Center reports 73% of teachers say that they, or their students, used cell phones to complete schoolwork (Purcell, Heaps, Buchanan, & Friedrich, 2013). The findings of a survey of 628 United States midwestern high school students indicated students generally agreed with using cell phones in the classroom and that cell phones support learning (Thomas & Munoz, 2016). The Thomas and Munoz study findings indicated 90.7% of the participating students reported using their phones for school related work.

The review of literature indicated that students' perceptions of their use of cell phones as learning tools may be different from reality. A study of college students who had never owned a smartphone, were given one to use as they wished for a 1-year time period. The students reported that smartphones did not help them to study as they believed they would have before the trial (Tossell, Kortum, Shepard, Rahmati, & Zhong, 2015). These students also responded that the phones proved to be a distraction and a significant drop in GPA was linked to students reporting the cell phone as a distraction (Tossell et al., 2015).

The review of literature revealed that teachers' perceptions varied greatly from students perceptions. The study findings of a 2014 survey of 245 elementary, middle and high school teachers in Shenzhen, China indicated teachers reported the most significant impact of mobile phone use by students was the disruption to learning. A total of 92.3% of teachers in high school, 88.6% in middle school and 68.9% at the elementary level identified a disruption to learning as the greatest impact on students (Gao, Yan, Zhao, Pan, & Mo, 2014). The study found that mobile phone use was the highest in high school at 77.4%, followed by middle school at 35.32% and lowest at elementary school at 19.2%. In elementary schools, there were generally more restrictive policies regarding mobile phone use. The Gao et al. (2014) study indicated that teachers in China believed that cell phones caused a significant distraction to students in the classroom in elementary, middle and high school.

Some teachers who acknowledge the potential distraction of cell phones have chosen to embrace the potential positive effects of cell phones including reducing conflict with teachers over student's phones, increased student engagement, use of educational applications and replacing needed supplies such as laptops (Ferriter, 2010). A cell phone may be used as a responding tool for a student, utilized for polls and quizzes, replacing supplies that a school may not be able to afford (Ferriter, 2010).

The review of literature indicated that cell phones and other mobile devices need not replace traditional teaching techniques, but may instead augment them. Eliasson, Pargman, Nouri, Spikol, and Ramberg (2011) recommended utilizing mobile devices as tools to support learning used in conjunction with students collaborating face to face with other students. Cell phones may be used to conduct research or collaborate with classmates. These recommendations

were the result of a qualitative study using observation in middle school classes and teacher interviews (Eliasson et al., 2011). In schools that allow teachers to permit student cell phone use, teachers may incorporate cell phones as internet researching devices or utilize educational apps (Eliasson et al., 2011).

An example of pairing technology with traditional teaching techniques is called "flipping the classroom," where students are first exposed to educational material outside of classroom instructional time, utilizing class time for higher level learning of the material (Brame, 2013). Teachers may record lectures as podcasts or online videos for students to gain a basic understanding of the material to prepare for class (Chadband, 2012). A problem with the technique exists in low socioeconomic schools and neighborhoods, where computers may not be readily available for students to access the material. Three percent of teachers working in high-poverty schools agreed with the statement "students have the digital tools they need to effectively complete assignments while at home," compared to 52% of teachers in affluent schools (Darling-Hammond, Zielezinski, & Goldman, 2014).

Cell phones may be used to replace computers in schools with limited resources. A study of rural schools in Uganda found using cell phones to access free open educational resources increased enthusiasm and lead to more engaging and interactive lessons (Busulwa & Bbuye, 2018). The study recommended training teachers to use cell phones and open educational resources for instruction, especially in schools with limited access to internet and computers (Busulwa & Bbuye, 2018).

1:1 Initiatives

The review of literature examined the use of school issued personal electronic devices because of the similarities in functionality to cell phones; including internet connectivity, ability to download applications, take pictures and utilize communication features such as e-mail and messaging. The United States Department of Education (2016) recommended schools should implement technology resources, such as 1:1 personal electronic devices to improve student equity and ensure students access to quality educational technology. A meta-analysis of 1:1 school issued laptop initiatives found students experience significant improvements in academic achievement with proper support for students and teachers (Zheng & Henion, 2016). The number of school districts that are providing students with school issued 1:1 devices is increasing (Molnar, 2015). In 2016, 54% of students and teachers were given access to a personal electronic device by schools in the United States, a steady increase from 46% in 2015, 37% in 2014, 28% in 2013 and 23% in 2012 (Molnar, 2015).

One school districts' technology policy allows for students to opt into the school districts' 1:1 iPad program or bring their own laptop or personal electronic device. The following is an example of a school district in Minnetonka, Minnesota that provides iPads to students in Grades 5-12 to be used for educational purposes.

1. The District provides appropriate technology devices for learning when specific devices are required. Teachers may also permit, but not require, students to use personal electronic devices in support of learning, at the discretion of the teacher or other school staff.
2. Cellular phones and other personal electronic devices shall remain silent and be kept out of sight during instructional time, unless specifically allowed by the teacher or other school staff.
3. Students shall not use any electronic device that in any way disrupts or detracts from the educational environment or for inappropriate, unethical or illegal purposes, including but not limited to, transmission or viewing of inappropriate or pornographic

material, violations of others' privacy rights, cheating, harassing or bullying behavior. Accessing inappropriate material in school, on a school bus, or at a school activity will result in disciplinary action, even if such access is accidental. Parents are encouraged to monitor and/or restrict cellular internet access for students.

4. Cellular phones and other devices may be used appropriately and respectfully before and after each class or in approved common areas throughout the day. (Minnetonka Public Schools, 2015, p. 1)

Implementing 1:1 device initiatives is not without its challenges and school and district leaders must prepare sufficiently before disseminating devices to students. Schools must maintain an adequate internet connection, train teachers effectively before the device arrives and give students ownership of the device to increase engagement and participation (Thompson, 2017).

The review of literature indicated that educators are divided regarding the positive educational impact of 1:1 initiatives versus the negative impact. Tagsold (2013) interviewed high school teachers in North Carolina to measure the impact of laptops and specific teaching strategies in the classroom. Her study revealed the following themes from the data:

> Laptops make learning more fun, students are less distracted when assignments are challenging, students are likely more distracted in class than teachers think they are, teachers and students are developing ways to manage distraction and teachers and students understand that technology is here to stay. (Tagsold, 2013, p. 135)

Tagsold (2013) also found the positive impact of laptops is maximized and the negative impact is minimized by increasing student engagement with challenging assignments and teaching students to manage the distraction of the devices.

Laptop use during class has been linked to a negative impact on student learning. A study of 5,600 college students concluded that using a laptop during class had a negative impact on grades and had the largest effect on male and low performing students (Patterson & Patterson, 2017). The findings of a survey of college students indicated that laptop use in a large lecture

course contributed to an increase in multi-tasking and was distracting to students and classmates (Fried, 2008). Increased laptop use was also related to decreased performance in the course (Fried, 2008).

A study of Australian college students with school-issued tablets demonstrated that students adapted new strategies to manage the impact of continuous connection to the internet (Park, 2013). Strategies included deleting troublesome apps and staying away from the device in order to maintain focus on important tasks. Participants in the study acknowledged the challenges of being constantly connected to the Internet and social media, but reported generally positive feelings about using the device (Park, 2013). Students have the ability to manage their technology and mitigate the negative effects of PED's (Park, 2013).

Summary

The review of literature examined students and teachers use of cell phones in schools and the impact on student learning. School cell phone policy examples and research regarding the effectiveness of cell phones bans were reviewed to be a resource for the creation of more effective cell phone policies. Literature related to the use of cell phones and other personal electronic devices as learning devices was reviewed to determine how schools and school districts can engage students and improve student learning utilizing technology.

The review indicated disagreement among students, teachers, principals and researchers regarding the impact of cell phones in schools and best practices for school cell phone policies designed to improve student learning and achievement. Some findings indicate banning cell phones in schools increases achievement (Beland & Murphy, 2015). Other research has found that utilizing cell phones as learning tools can increase student motivation and engagement

during class (Busulwa & Bbuye, 2018). Statistics indicated an increasing number of schools in the United States have repealed cell phone bans (Kiema, 2015). The largest school district in the United States, New York City public schools, repealed their school district ban of students' possession of cell phones in 2015 (Allen, 2015).

Throughout the review of literature, a significant absence of research was found regarding teachers' use of cell phones in schools and the impact on student learning. Very little research has been conducted on the topic since the Obringer and Coffey study (2007) measured principals' perceptions of the impact of teacher cell phone use on student learning.

Chapter III: Methodology

Introduction

The purpose of the study was to determine Minnesota high school (Grades 9-12) principals' perceptions of the effectiveness of their school districts' cell phone policies and their perceptions of the impact of teacher and student cell phone use in the classroom on student learning. A 2007 study discovered that 22% of high school principals in the United States perceived that direct instructional time was dissipated due to teacher cell phone usage and 31% believed that the attention of teachers was adversely affected due to their use of their cell phone during class time. Principals' perceptions of teachers' and students' use of cell phones in the classroom and the impact on student learning have not been measured since the Obringer and Coffey study (2007). The study sought to replicate portions of the 2007 Obringer and Coffey study.

Research Questions

The following research questions were addressed in the study:

1. How did Minnesota high school principals perceive the effectiveness of their school districts' policies on teacher use of cellphones in their schools?
2. How did Minnesota high school principals perceive the effectiveness of their school districts' policies on student use of cellphones in their schools?
3. How did Minnesota high school principals perceive the impact of teachers' use of their cell phones on student learning?
4. How did Minnesota high school principals perceive the impact of students' use of their cell phones on student learning?

Participants

The study participants were comprised of active head and assistant high school principals in the state of Minnesota who were members of Minnesota Association of Secondary School Principals (MASSP). All principals who met the established criteria were invited to participate in the study.

The selected principals served in schools which enrolled students in Grades 9-12 or 10-12. High school principals were selected as study participants because they were typically responsible for facilitating the school's cell phone policy.

Human Subject Approval—Institutional Review Board (IRB)

Human subjects were protected throughout the study utilizing anonymous survey responses. Participation in the study was completely voluntary and responses could not be linked to survey responses as they were completely confidential and anonymous. Subjects were provided the opportunity to withdraw from the survey at any point without being subject to penalty. The researcher completed IRB training on November 28, 2017.

Instrumentation

The instrument employed in the study was a Survey Monkey online survey tool (Appendix A) . The researcher developed the survey by replicating and modifying select items on the instrument created by Dr. John Obringer and Dr. Kent Coffey for the study *Cell Phone in American High Schools: A National Survey* (2007). Permission was granted by Dr. Coffey in June of 2017 for use and replication of the survey tool developed for their study (Appendix B). The following excerpt from Obringer and Coffey's methodology section of the study details the

process used to create the original Obringer-Coffey survey items and addresses reliability and validity through the conduct of a pilot study and review by a panel of experts.

> A literature review was conducted to determine the issues and controversies associated with the use of cell phones in school settings, resulting in a large number of potential items identified for possible inclusion. The investigators then developed a draft of the survey. A panel of experts (building principals) was assembled to review the draft survey. The panel consisted of 11 principals who were selected to represent both rural and suburban settings along with small and large schools. The panel of experts provided feedback on the clarity, purpose, and comprehensiveness of the survey. Using their feedback, the survey was modified and a relatively small pilot study was conducted using an intact group of 15 educators associated with the university. The pilot study revealed no problems with the survey instrument. The survey was then finalized with 19 items, divided into three types of responses: yes/no, agree/disagree, and short answer. (Obringer & Coffey, 2007, p. 42)

The following is the original Obringer-Coffey survey that was distributed to 100 high school principals in all 50 States in the United States of America.

For Questions 1-8 circle Yes or No:

1. Does your school/district have a written policy regarding cell phones?
2. Does your school permit cell phone use by teachers?
3. Does your school permit cell phone use by students?
4. Does your school allow students to leave cell phones on silent mode?
5. Do teachers have access to a hard-wired phone in their classrooms?
6. Do you believe that teachers who utilize cell phones use them only for school-related business?
7. Does your school district supply cell phones for administrators?
8. Do bus drivers have cell phones supplied by the school/district for safety?

For Questions 9-15, circle SA for strongly agree, A for agree, D for disagree and SD for strongly disagree:

9. Direct instructional time is lost due to cell phone use by teachers.
10. Teachers having cell phones improves school safety.
11. Teachers having cell phones facilitates prompt teacher-parent communication.
12. Major incidents of violence (e.g. Columbine High School) influenced my school's/district's policy on cell phones.
13. Parents are supportive of the school's overall cell phone policy.

14. Cell phone use by teachers adversely affects the sustained focus of teachers on the classroom/students.
15. Text-messaging features are a problem/potential problem during tests and examinations.

For Questions 16-19 please answer briefly:

16. What is the exact policy if a student's cell phone rings during class?
17. What is the exact policy if a teacher's cell phone rings during class?
18. Approximately what percentage of your school's teachers, if any, misuse cell phones for personal business?
19. How has your school addressed the issue of camera phones impacting student privacy (e.g. in school locker room, nurse's office, uploading videos to the web, etc..) or students taking photos of a test for friends?

The researcher replaced Questions 1 and 2 with the following question: What is your perception of how effective your school district's policy is regarding teachers' use of their cell phones? Principals were asked to select a response from one of the following four choices: the district does not have an in-school cell phone policy for teachers; the policy is not effective; the policy is somewhat effective; or the policy is very effective.

The researcher replaced Question 3 with the following question: What is your perception of how effective your school district's policy is regarding students' use of their cell phones? Principals were asked to select a response from one of the following four choices; the district does not have an in-school cell phone policy for students; the policy is not effective; the policy is somewhat effective; or the policy is very effective.

The researcher replaced Questions 6, 14, and 18 with the following questions to be rated by principals: What is your perception of the impact of teachers' cell phone use on their quality of instruction; and what is your perception of the impact of teachers' cell phone use on their focus on student engagement? Principals were asked to indicate if they perceived teachers' use of

cell phones to have a negative impact, no impact or a positive impact on quality of instruction and student engagement.

The researcher replaced Questions 6, 14, and 18 with the following questions to be rated by principals: What is your perception of the impact of students' cell phone use on their instructional time; and What is your perception of the impact of students' cell phone use on their focus and engagement in learning? Principals were asked to indicate if they perceived the student use of cell phones to have a negative impact, no impact or a positive impact on instructional time and student focus and engagement in learning.

The researcher removed Questions 4, 5, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, and 19 to narrow the focus of the survey questions to align with the research questions of the study. The researcher piloted the study instrument with a cohort of doctoral students at St. Cloud State University. All pilot participants owned a cell phone, had a basic understanding of the capabilities of cell phones and had been employed in schools that had cell phone policies. Following the pilot study, adjustments were made to select survey instrument items for clarification purposes.

Research Design

A quantitative methodology was employed in the conduct of the study. Fraenkel, Wallen and Hyun describe quantitative research as which "the investigator attempts to study naturally occurring phenomena in all their complexity" (Fraenkel, Wallen, & Hyun, 1993). Data were collected to determine principals' perceptions of the effectiveness of the school cell phone policy for teachers and students and the impact of teacher and student cell phone use on quality of instruction and students' engagement. The survey instrument was modified from the original

design used by Obringer and Coffey (2007). The revision of the instrument permitted the researcher to gather more specific data concerning the impact of cell phone usage by teachers and students in the classroom. The study findings were compared to Obringer and Coffey's 2007 study findings.

Treatment of Data

Data were stored at the Saint Cloud State Statistical, Consulting and Research Center. Variables were analyzed by examining the frequency of each data set of survey question responses. These results were compared to the survey results collected by Obringer and Coffey (2007).

Procedures and Timeline

The researcher submitted an IRB application for permission to survey human subjects on April 23, 2018. The preliminary presentation for dissertation committee was conducted on April 23, 2018. The researcher received endorsement (Appendix C) to conduct the study from the Executive Director of MASSP. The researcher disseminated the survey to all MASSP member high school principals (Grades 9-12 and 10-12) utilizing email during May, 2018. The survey link was emailed to all 435 high school principals in the state of Minnesota who were active MASSP members in May, 2018. The survey link opened to the informed consent of the study (Appendix D) describing the study and outlining confidentiality procedures. A letter (Appendix E) was sent by email to potential survey participants describing the study and soliciting participation. A reminder email (Appendix F) was sent to potential survey participants two weeks after the original email. A third email (Appendix G) was sent to potential survey participants in June, 2018 at the start of the MASSP Summer Conference.

The Saint Cloud State Statistical, Consulting and Research Center created the survey utilizing the Survey Monkey program. The link to the survey was emailed to potential survey participants utilizing the MASSP listserv. The Saint Cloud State Statistical, Consulting and Research Center stored the data on a secure server.

Summary

The study sought to determine Minnesota high school principals' perceptions of the effectiveness of their school districts' cell phone policies and the impact of teacher and student cell phone usage on student learning. The study replicated components of the Obringer and Coffey study (2007). With the assistance of the Minnesota Association of Secondary School Principals, the researcher distributed electronic surveys to all active Minnesota high school principals and assistant principals who were MASSP members. The study compared the results of its survey to those of the Obringer and Coffey survey (2007) to determine whether or not changes in data occurred since 2007. The results of the study may be used to create more effective cell phone policies in high schools.

Chapter IV: Results

Introduction

In the study *Cell Phones in American High Schools: A National Survey*, Obringer and Coffey (2007) surveyed high school principals in the United States utilizing a 19-item survey designed to research school cell phone policies, cell phone use by teachers and school safety issues involving the use of cell phones. The results of the survey revealed that principals perceived almost all schools had written policies governing student cell phone use; the most common feature of the policies was the prohibition of using cell phones at school; almost all schools permitted cell phone use by teachers; teachers used cell phones for non-school related business; and instructional time was not lost due to teacher use of cell phone during school hours.

A review of related literature revealed that student cell phone use negatively impacted multiple areas of learning including focus and academic achievement (Duncan, Hoekstra, & Wilcox, 2012). Research was limited to the use of cell phones by teachers in schools. The literature also showed that cell phone bans were associated with improved standardized test scores (Beland & Murphy, 2015), but were extremely difficult to implement equitably (Kiema, 2015). Some schools were using cell phones as tools to augment traditional teaching techniques and support learning (Eliasson et al., 2011).

Purpose of the Study

The purpose of the study was to determine Minnesota high school (Grades 9-12) principals' perceptions of the effectiveness of their school districts' cell phone policies and their perceptions of the impact of teacher and student cell phone use in the classroom on student

learning. The results of the study were compared to the findings of a study conducted by Obringer and Coffey (2007). The results of the study are intended to be used to assist school principals and other school district policy makers in the formulation of policies regulating the use of cell phones in schools.

Participants

The study participants were comprised of active head and assistant high school principals in the state of Minnesota who were members of Minnesota Association of Secondary School Principals (MASSP) in 2018. All principals who met the established criteria were invited to participate in the study. The selected principals served in schools which enrolled students in Grades 9-12 or 10-12. High school principals were selected as study participants because they were typically responsible for facilitating their school's cell phone policies.

The researcher disseminated the survey to all MASSP member high school principals (Grades 9-12 and 10-12) utilizing email study during May, 2018. The survey link was emailed to all 435 high school principals in the state of Minnesota who were active MASSP members in May, 2018. A letter (Appendix C) was distributed by email to potential survey participants describing the study and outlining confidentiality procedures. A reminder email was sent to potential survey participants two weeks after the original email. A third email was sent to potential survey participants in June, 2018 at the start of the MASSP Summer Conference.

When the survey window closed, 90 principals started the survey and 89 principals completed the survey, resulting in a 20% completion rate. One participant answered Questions 1-4 and chose not to answer Questions 5 and 6. Survey findings are found below, organized by the

associated research question. Chapter V analyzes the results of the survey and connects the finding to related literature.

Research Questions

1. How did Minnesota high school principals perceive the effectiveness of their school districts' policies on teacher use of cellphones in their schools?
2. How did Minnesota high school principals perceive the effectiveness of their school districts' policies on student use of cellphones in their schools?
3. How did Minnesota high school principals perceive the impact of teachers' use of their cell phones on student learning?
4. How did Minnesota high school principals perceive the impact of students' use of their cell phones on student learning?

Research Question 1

How did Minnesota high school principals perceive the effectiveness of their school districts' policies on teacher use of cellphones in their schools?

Table 1 described the responses of principal participants regarding their perception of the existence of their school districts' policies regarding teachers' use of their cell phones.

Table 1

Principals' Reporting the Existence of a Cell Phone Policy for Teachers (n = 90)

Response	Frequency	Percent
The district does not have an in-school cell phone policy for teachers.	55	61.1%
The district has an in-school cell phone policy for teachers.	35	38.9%
Total	90	100.0%

Table 1 data revealed the majority of respondents, 55 or 61.1% of responding principals reported that their school district did not have a cell phone policy for teachers. Thirty-five or 38.9% reported that their school district had a cell phone policy for teachers.

Table 2 data described participants' perceptions of the effectiveness of their school districts' policies regarding teachers' use of their cell phones. Each of the data reported represented the effectiveness of the policy for the majority of teachers in their school.

Table 2

Principals' Perceptions of the Effectiveness of Their School Districts' Policies Regarding Teachers' Use of Their Cell Phones (n = 35)

Response	Frequency	Percent
The policy is not effective.	5	14.3%
The policy is somewhat effective.	25	71.4%
The policy is very effective.	5	14.3%
Total	35	100.0%

Table 2 data revealed the majority of respondents, 25 or 71.4% indicated that their school districts had policies in place regarding teachers' use of their cell phones and rated their policies as somewhat effective. Five responding principals or 14.3% designated that their school districts' policies were very effective, while five respondents or 14.3% expressed that their school districts' policies were not effective.

Research Question 2

How did Minnesota high school principals perceive the effectiveness of their school districts' policies on student use of cellphones in their schools?

Table 3 described the responses of principal participants regarding their perceptions of the existence of their school districts' policies regarding student's use of their cell phones.

Table 3

Principals' Reporting the Existence of an In-School Cell Phone Policy for Students (n = 90)

Response	Frequency	Percent
The district does not have an in-school cell phone policy for students.	16	17.8%
The district has an in-school cell phone policy for students.	74	82.2%
Total	90	100.0%

Table 3 data revealed the majority of respondents, 74 or 82.2% of responding principals reported that their school district had a cell phone policy for students. Sixteen or 17.8% reported that their school district did not have a cell phone policy for students.

Table 4 data described participants' perceptions of the effectiveness of their school districts' policies regarding student's use of their cell phones. Each of the data reported represented the effectiveness of the policy for the majority of students in their school.

Table 4

Principals' Perceptions of the Effectiveness of Their School Districts' Policies Regarding Students' Use of Their Cell Phone (n = 90)

Response	Frequency	Percent
The policy is not effective.	20	27.0%
The policy is somewhat effective.	51	68.9%
The policy is very effective.	3	4.1%
Total	74	100.0%

Table 4 data revealed the majority of respondents, 51 respondents or 68.9% rated their policies as somewhat effective. Twenty respondents or 27.0% of responding principals stated that their school districts' policies regarding students' use of their cell phones were not effective

while three or 4.1% of responding high school principals reported that their school districts' policies regarding students' use of their cell phones were very effective.

Research Question 3

How did Minnesota high school principals perceive the impact of teachers' use of their cell phones on student learning?

The researcher sought to answer research question three by asking responding high school principals to state their perceptions of the impact of teachers' cell phone use on the quality of their instruction (Survey Question 3) and the impact of teachers' cell phone use on their focus on student engagement (Survey Question 4).

Table 5 data described the responses of principal participants regarding their perceptions of the impact of teachers' cell phone use on the quality of their instruction. Each of the data reported represented the impact of teachers' cell phone use for the majority of teachers in their school.

Table 5

Principals' Perceptions of the Impact of Teachers' Cell Phone Use on the Quality of Their Instruction (n = 90)

Response	Frequency	Percent
Positive impact	9	10.0%
No impact	66	73.3%
Negative impact	15	16.7%
Total	90	100.0%

Table 5 data revealed the large majority of respondents, 66 or 73.3% perceived no impact of teachers' cell phone use on their quality of instruction. Fifteen or 16.7% of responding principals indicated teachers' cell phone use had a negative impact on the quality of their

instruction. Nine or 10.0% of respondents perceived teachers' cell phone use had a positive impact on the quality of their instruction.

Table 6 described the responses of principal participants regarding their perceptions of the impact of teachers' cell phone use on their focus on student engagement. Each of the data reported represented the impact of teachers' cell phone use for the majority of teachers in their school.

Table 6

Principals' Perceptions of the Impact of Teachers' Cell Phone Use on Their Focus on Student Engagement (n = 90)

Response	Frequency	Percent
Positive impact	12	13.3%
No impact	54	60.0%
Negative impact	24	26.7%
Total	90	100.0%

Table 6 data revealed the majority of respondents, 54 or 60.0% perceived no impact of teachers' cell phone use on their focus on student engagement. Twenty-four or 26.7% of participants reported they perceive negative impacts, while 12 or 13.3% perceived positive impacts of teachers' cell phone use on their focus on student engagement.

Research Question 4

How did Minnesota high school principals perceive the impact of students' use of their cell phones on student learning?

The researcher sought to answer Research Question 4 by asking responding high school principals to express their perceptions of the impact of students' cell phone use on their

instructional time (Survey Question 5) and the impact of students' cell phone use on their focus and engagement in learning (Survey Question 6).

Table 7 described the responses of principal participants regarding their perceptions of the impact of students' cell phone use on their instructional time. Each of the data reported represent the impact of students' cell phone use for the majority of students in their school.

Table 7

Principals' Perceptions of the Impact of Students' Cell Phone Use on Their Instructional Time (n = 89)

Response	Frequency	Percent
Positive impact	5	5.6%
No impact	7	7.9%
Negative impact	77	86.5%
Total	89	100.0%

Table 7 data revealed the majority of respondents, 77 or 86.5% perceived negative impacts of students' cell phone use on their instructional time. Seven or 7.9% of participants perceived no impact of students' cell phone use on their instructional time while five respondents or 5.6% reported they perceived positive impacts.

Table 8 described the responses of principal participants regarding their perceptions of the impact of students' cell phone use on their focus and engagement in learning. Each of the data reported represented the impact of students' cell phone use for the majority of students in their school.

Table 8

Principals' Perceptions of the Impact of Students' Cell Phone Use on Their Focus and Engagement in Learning (n = 89)

Response	Frequency	Percent
Positive impact	6	6.7%
No impact	5	5.6%
Negative impact	78	87.6%
Total	89	100.0%

Table 8 data revealed the great majority of respondents, 78 or 87.6% reported they perceived negative impacts of students' cell phone use on their focus and engagement in learning. Six or 6.7% of responding principals perceived positive impacts while five or 5.6% of responding principals expressed they perceived students' cell phone use had no impact on their focus and engagement in learning.

Summary

The preponderance of responding high school principals in Minnesota (86.5%) perceived a negative impact of students' cell phone use on their instructional time. Most Minnesota high school principals (87.6%) also perceived students' cell phone use to have a negative impact on their focus and engagement in learning. These findings supported previous research that "show a significant negative correlation between in-class phone use and final grades" (Duncan et al., 2012). The majority of participating Minnesota high school principals (68.9%) perceived that their school districts' policies regarding students' use of their cell phones was "somewhat effective." Nonetheless, greater than one in four respondents (n = 20; 27.0%) perceived their school districts' policies related to students' use of cell phones were not effective.

The majority of Minnesota high school principals (61.1%) reported that their school districts did not have in-school cell phone policies for teachers. The majority of responding principals (73.3%) indicated that they perceived no impact of teachers' cell phone use on their quality of instruction and most (60.0%) perceived teacher cell phone use to have no impact on teacher focus on student engagement.

Chapter V: Summary, Conclusions, and Recommendations

Research Purpose

The purpose of the study was to determine Minnesota high school principals' (Grades 9-12) perceptions of the effectiveness of their school districts' cell phone policies and their perceptions of the impact of teacher and student cell phone use in the classroom on student learning.

Chapter V provided a comparison of the results of the study to the findings of an original study conducted by Obringer and Coffey (2007) and other related research reviewed in Chapter II. The results of the study were intended to be used to assist school principals and other policy makers in the formulation of policies regulating the use of cell phones in their schools.

Research Questions

The following research questions were addressed by the study:

1. How did Minnesota high school principals perceive the effectiveness of their school districts' policies on teacher use of cellphones in their schools?
2. How did Minnesota high school principals perceive the effectiveness of their school districts' policies on student use of cellphones in their schools?
3. How did Minnesota high school principals perceive the impact of teachers' use of their cell phones on student learning?
4. How did Minnesota high school principals perceive the impact of students' use of their cell phones on student learning?

Research Design

A quantitative methodology was employed in the conduct of the study. Fraenkel et al. (1993) described quantitative research as those in which "the investigator attempts to study naturally occurring phenomena in all their complexity". Data were collected to determine principals' perceptions of the effectiveness of their school's cell phone policies on teachers and students and the impact of teacher and student cell phone use on the quality of instruction and student engagement. The study survey instrument was a modification of the original instrument employed by Obringer and Coffey (2007). The revision of the Obringer and Coffey instrument permitted the researcher to gather more specific data concerning the impact of cell phone usage by teachers and students in the classroom.

The researcher collaborated with the Minnesota Association of Secondary School Principals (MASSP) to conduct the study and received endorsement from the Executive Director of MASSP to conduct the study (Appendix C). The researcher disseminated the survey to all MASSP member high school principals (Grades 9-12 and 10-12) utilizing email during May 2018. A survey link was emailed to all 435 high school principals in the state of Minnesota who were active MASSP members in May 2018. The survey link opened to the informed consent of the study (Appendix D) describing the study and outlining confidentiality procedures. A letter (Appendix E) was sent by email to potential survey participants describing the study and soliciting participation. A reminder email (Appendix F) was sent to potential survey participants two weeks after the original email. A third email (Appendix G) was sent to potential survey participants in June 2018 at the start of the MASSP Summer Conference.

The St. Cloud State University Statistical, Consulting and Research Center created the survey utilizing the Survey Monkey program. A link to the survey was emailed to potential survey participants utilizing the MASSP listserv. When the survey concluded, 90 (n = 90) responses had been collected. The Saint Cloud State University Statistical, Consulting and Research Center stored the study data on a secure server.

Conclusions

Research Question 1

How did Minnesota high school principals perceive the effectiveness of their school districts' policies on teacher use of cellphones in their schools?

Survey respondents were asked to rate their perceptions of the effectiveness of their school districts' policies regarding teachers' use of their cell phones or indicate that such a policy did not exist in their school districts. A small minority of responding high school principals, five or 14.3% rated their policies as very effective. Twenty-five respondents or 71.4% designated that their school districts' policies were somewhat effective. Five respondents or 14.3% expressed that their school districts' policies were not effective. Based on 85.7% of Minnesota high school principals perceiving these policies to be somewhat effective or not effective, further study was warranted to determine the causes of the ineffectiveness of the policies.

Fifty-five or 61.1% of responding Minnesota principals reported that their school districts did not have school cell phone policies by teachers while 38.9% reported their schools had policies related to cell phone use by a teacher. Research conducted by Obringer and Coffey (2007) indicated that 78% of responding high school principals reported their schools permitted cell phone use by teachers and 84% indicated the existence of policies regarding cell phones. The

survey instrument used by Obringer and Coffey (2007) did not differentiate between a cell phone policy for teachers or such a policy for students on this question. Obringer and Coffey (2007) wrote that "Almost all schools/districts have a written policy regarding cell phones; however, these policies primarily address students' use of cell phones" and "almost all schools permit cell phone use by teachers" (p. 44). The findings indicated an increase in the number of high schools with policies regulating cell phone use by teachers.

The majority of responding high school principals, 55 or 61.1% of responding Minnesota principals, reported that their school districts did not have school cell phone policies for teachers. These findings may be influenced by the perception that teacher cell phone use does not have a negative impact on the learning environment. According to the findings of Research Question 3, a small minority of responding principals, 15 or 16.7%, perceived that teachers' cell phone use had a negative impact on the quality of their instruction. School district leaders may be choosing not to dedicate time and resources to regulating teacher cell phone use when it is perceived not to have a significant negative impact on the learning environment.

The findings of the study indicated a small minority of responding high school principals (n = 5; 14.3%) believe their teacher cell phone policies were very effective; however, 61.1% of responding principals reported that their school districts did not have school cell phone policies for teachers.

Research Question 2

How did Minnesota high school principals perceive the effectiveness of their school districts' policies on student use of cellphones in their schools?

Survey respondents were asked to rate their perceptions of the effectiveness of their school districts' policies regarding students' use of their cell phones or indicate that such policies did not exist. An extremely small minority of responding high school principals, three or 4.1%, rated the policies as very effective. Additional study to discover the features of the three very effective rated policies would reveal factors of an effective cell phone policy for students.

Fifty-one respondents or 68.9% rated their policies as somewhat effective, while 20 respondents or 27.0% stated their school districts' policies regarding students' use of their cell phones were not effective. Based on 95.9% of Minnesota high school principals perceiving these policies to be somewhat effective or not effective, further study is warranted to determine the causes of the ineffectiveness of the policies to create more effective policies.

Seventy-four or 82.2% of responding principals reported that their school districts had school cell phone policies for students. Research conducted by Obringer and Coffey (2007) indicated that 84% of responding high school principals in their study reported the existence of policies regarding student use of cell phones. The results in the Obringer and Coffey study did not differentiate between a cell phone policy for teachers or such a policy for students, however the researchers reported that "these policies primarily address students' use of cell phones" (Obringer & Coffey, 2007, p. 44).

The findings of the study related to the percentage of Minnesota high schools with policies in 2018 regarding student cell phone use were found to be consistent with the findings from the Obringer and Coffey study, despite technological advances in the functioning of cell phones and an increase in cell phone ownership among teenagers (Lenhart, 2015). The lack of an

increase from 2007 to 2018 in the percentage of high schools with a cell phone policy for students was an unexpected finding.

The findings of the study indicated an extremely small number of Minnesota high school principals (n = 3; 4.1%) believed that their student cell phone policies were very effective.

Research Question 3

How did Minnesota high school principals perceive the impact of teachers' use of their cell phones on student learning?

Survey respondents were asked to rate their perceptions of the impact of teachers' cell phone use on the quality of their instruction and their focus on student engagement. The minority of responding principals, 15 or 16.7%, perceived that teachers' cell phone use had a negative impact on the quality of their instruction. Sixty-six or 73.3% of respondents perceived no impact, while nine or 10.0% of respondents perceived teachers' cell phone use had a positive impact on the quality of their instruction.

Research conducted by Obringer and Coffey (2007) indicated that 22.0% of high school principals in their study perceived that direct instructional time was lost due to cell phone use by teachers, a figure that was 5.3% higher than the perceptions obtained from responding Minnesota high school principals. The decrease in the perception of lost instructional time from teachers due to cell phone use occurred during the same period of time as cell phone use has increased among adults and cell phone functionality has increased. The data indicate the perceptions of principals that cell phones are distracting from teaching has decreased from 2007 to 2018 by 5.3%.

The minority of responding principals, 24 or 26.7%, indicated they perceived negative impacts from teacher cell phone use on their focus on student engagement. Fifty-four or 60.0% of respondents reported there was no impact and 12 or 13.3% of responding principals perceived positive impacts of teachers' cell phone use on their focus on student engagement. The majority or 60.0% of high school principals perceived that teacher cell phone did distract teachers from focusing on the learning of their students.

Research conducted by Obringer and Coffey (2007) revealed that 31% of high school principals in their study perceived that cell phone use by teachers adversely affected the focus of teachers on students, a figure that was 4.3% higher than the perceptions obtained from responding Minnesota high school principals.

These findings may have been a determining factor in the lack of policies regulating teacher cell phone use, outlined in research question one. School cell phone policies would not have needed to create teacher cell phone policies if the perceptions were that teachers' cell phone use did not have a negative impact on the learning environment for students.

The findings of the study indicated the majority of Minnesota high school principals (n = 66, 73.3%) believed that teacher cell phone use had no impact on the quality of their instruction.

Research Question 4

How did Minnesota high school principals perceive the impact of students' use of their cell phones on student learning?

Survey respondents were asked to rate their perceptions of the impact of students' cell phone use on their instructional time and on their focus and engagement in learning for the

majority of students. The great majority of responding principals, 77 or 86.5%, perceived a negative impact of students' cell phone use on their instructional time. Seven or 7.9% of participants perceived no impact of students' cell phone use on their instructional time, while five respondents or 5.6% reported they perceived positive impacts.

The majority of Minnesota high school principals' perceptions of the impact of students' cell phone use on their instructional time were supported by the research findings of Duncan et al., (2012). Researchers at the University of Colorado reported that University students' "cell phone use is significantly correlated with reduced learning outcomes: students who reported no cell phone use earned significantly higher grades than those who used their phones during class" (Duncan et al., 2012, p. 2).

Seventy-eight or 87.6% of responding principals reported they perceived negative impacts of students' cell phone use on their focus and engagement in learning. Six or 6.7% of responding principals perceived positive impacts, while five or 5.6% of responding principals expressed they perceived students' cell phone use had no impact on their focus and engagement in learning.

The perceptions of the majority of Minnesota high school principals on the impact of student cell phone use on their focus and engagement in learning were supported by the research findings of Bellur et al. (2015). Research conducted on college students who used technology to multitask during instruction in class demonstrated lower academic performance and spent more time studying outside of class to compensate (Bellur et al., 2015).

The findings of the study indicated the great majority of Minnesota high school principals believed that student cell phone use had a negative impact on student learning.

Discussion

A review of related literature revealed cell phone usage has become commonplace among teenagers (Lenhart, 2015). Numerous studies have linked cell phone use to distractibility and decreased academic achievement (Duncan et al., 2012). The research findings revealed that 86.5% of Minnesota high school principals believed that students' cell phone use has a negative impact on their instruction time.

Due to the impact on student academic achievement and the findings of the study, it is recommended that school leaders and policy makers review research related to the impact of cell phone use in schools to consider banning or restricting student cell phone use during school. Research conducted by Beland and Murphy (2015) indicated banning cell phones had a positive impact on student standardized test scores. Many educators have indicated significant concerns related to students use of cell phones for cyberbullying, cheating, sexting, and other inappropriate uses (Kiema, 2015). Restricting student cell phone use during school hours has the potential to positively impact student achievement and decrease the distraction they pose to students during instructional time.

School leaders who elect to change cell phone policies should give serious consideration to all potential impacts of a cell phone policy change. The lifting of the New York City public schools cell phone ban in 2015 was due in large part to concerns over equity, safety, and the feasibility of enforcement (Allen, 2015). Performing an audit or survey may provide school policy makers with the data necessary to justify a policy change and proactively anticipate problems that may arise. The New York City case study demonstrated that garnering parent support for school cell phone policies has the potential to impact its success or failure.

A small minority, 4.1%, of Minnesota high school principals rated their student cell phone policies as very effective. Based on the findings, it is recommended that school leaders perform an audit to determine how cell phones are being used by students during school hours and the effectiveness of the policies that govern their use. An examination of discipline referrals related to cell phone and personal electronic device use is recommended to better understand the misuse of cell phones during school hours. These data may be used to create or modify cell phone policies to be more effective.

It is recommended that principals gather feedback from students, teachers, and parents to understand their perceptions of the impact of cell phone use in their schools. This information may be considered when creating or modifying existing cell phone policies. Surveying teachers, students and parents regarding cell phone usage may determine areas of need and result in the creation and implementation of more effective policies.

The findings of the study indicated principals perceive teacher cell phone use to be a much less significant issue than student cell phone use. Most Minnesota high school principals reported the lack of a teacher cell phone policy, however less than two out of ten perceived teacher cell phone use to negatively impact instruction. As detailed in Research Question 1, 61.1% of Minnesota principals indicated that their school districts did not have school cell phone policies for teachers. The findings show teacher cell phone use was not perceived as a significant issue to principals, as only 16.7% of responding principals believed that teachers' cell phone use had a negative impact on the quality of teacher instruction, and as indicated in research question three, 83.3% of respondents perceived there to be a positive impact or no impact at all.

Cell phone use impacts multiple areas of student life, including learning, student achievement, socialization and behavior. The full impact of cell phones on young people may not be fully known for many years through further studies. The decisions that educational leaders make regarding cell phone use in schools has a significant impact on the lives of students. It is my hope that school leaders and policy makers will consider the study findings to create the most effective cell phone policies for the students they serve.

Limitations of the Study

Limitations of the study were as follows:

1. Participation in the study was voluntary, thus limiting the number of participants.
2. Respondents were required to open the link sent to their email on file with MASSP, thereby likely reducing the number of participants in the study.

Recommendations for Further Research

Based on the conclusions of the study, the following recommendations for further research were tendered:

1. A qualitative study may be conducted to determine the characteristics of teacher and student cell phone policies that have been rated as effective.
2. A qualitative study may be conducted to determine the barriers that contribute to the lack of student and teacher cell phone policies in schools.
3. A quantitative study may be conducted to determine if demographic data, such as school size and socioeconomic status, impact the existence and effectiveness of cell phone policies for teachers and students.

4. A quantitative study may be conducted to determine if the existence and effectiveness of school cell phone policies impact student learning and achievement.
5. A quantitative study may be conducted to determine if permitting students to possess and utilize their cell phones during the school day impacts student learning and achievement.

Recommendations for Professional Practice

The findings of the study indicated that over one in four responding Minnesota high school principals believed teacher cell phone use had a negative impact on their focus on student engagement, and the majority of principals reported that their school districts did not have school cell phone policies in place for teachers. Additionally, 4.1% of responding high school principals rated their in-school cell phone policies for students as very effective. The following recommendations have been submitted to assist school district leaders in their creation and revision of school cell phone policies regarding student and teacher cell phone usage during school hours.

1. Prior to revising existing school cell phone policies, it is recommended school district leaders determine the effectiveness of their current school cell phone policies to ascertain the ineffective aspects of the policy and areas for improvement.
2. It is recommended that school district leaders survey teachers, students and parents to determine the attitudes and perceptions of cell phone use in their schools. The data may be used to foresee potential barriers to implementation of new cell phone policies.

3. It is recommended that school district leaders examine available data related to cell phone use, including behavior referrals to determine the impact of cell phone use in schools.
4. It is recommended that all school district leaders formulate policies regarding teacher and student school cell phone use.
5. It is recommended that school district leaders consider banning cell phone use by students during school hours in order to secure potential improvement in student achievement, as indicated by the findings of Beland and Murphy (2015).
6. It is recommended that school district leaders consider implications of a school cell phone use ban, including the challenges faced by New York City public schools in implementing and eventually repealing a cell phone ban for 1.1 million students in 2015 (Allen, 2015).

Summary

In 2015 the Pew Research Center (Lenhart, 2015) reported 73% of teenagers had access to a smartphone. The percentage of adults who own cell phones has steadily increased over time from 62% in 2002 to 95% in 2016 (Pew Research Center, 2018). School and school district leaders have attempted to reduce the negative impacts of student and teacher use of cell phones during instructional time through written policies governing their use.

The study revealed that only one in seven high school principals found their school policies regulating teacher cell phone use to be very effective. Furthermore, 4.1% of responding high school principals who reported that their school districts had a school cell phone policy for students rated the policy as very effective.

Due to the study findings, the researcher recommends that school district leaders and policy creators examine and improve their policies regulating teacher and student cell phone use and consider banning student cell phone use during school hours.

The recommendation is supported by a study of English public high schools that found an improvement in student performance on standardized test scores in schools which banned the use of cell phones. That study asserted that banning cell phones had the greatest impact on the academic performance of low-achieving students and no significant impact on the scores of higher achieving students (Beland & Murphy, 2015). The findings contended that cell phone bans positively impacted student learning.

Banning student cell phone use in schools has resulted in logistical challenges, such as in 2006, when New York City public schools banned cell phone usage by 1.1 million students (Allen, 2015). The New York City Schools' ban was reversed in 2015. A reason for reversing the ban was that the policy had a disproportionate impact on low income students who were more likely to have their cell phones confiscated because of metal detectors in the schools they attended (Allen, 2015). Students needed their phones to insure their safety in walking to and from school (Allen, 2015). The New York City cell phone ban also proved extremely difficult to consistently and effectively enforce (Allen, 2015). School and school district leaders must consider the unique needs of all their students and communities in formulating school cell phone policies.

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Appendix A: Study Survey

Please identify the answer that best describes your perception of the **majority** of teachers or students in your school.

1. What is your perception of how effective your school district's policy is regarding teachers' use of their cell phones?
   - The district does not have an in-school cell phone policy for teachers.
   - The policy is not effective.
   - The policy is somewhat effective.
   - The policy is very effective.

2. What is your perception of how effective your school district's policy is regarding students' use of their cell phones?
   - The district does not have an in-school cell phone policy for students.
   - The policy is not effective.
   - The policy is somewhat effective.
   - The policy is very effective.

3. What is your perception of the impact of teachers' cell phone use on their quality of instruction?
   - Negative impact
   - No impact
   - Positive impact

4. What is your perception of the impact of teachers' cell phone use on their focus on student engagement?
   - Negative impact
   - No impact
   - Positive impact

5. What is your perception of the impact of students' cell phone use on their instructional time?
   - Negative impact
   - No impact
   - Positive impact

6. What is your perception of the impact of students' cell phone use on their focus and engagement in learning?
   - Negative impact
   - No impact
   - Positive impact

Appendix B: Study Replication Permission

As copyright holder or representative of the copyright holder(s), I have authority to grant permission for the use of the *Cell Phones in American High Schools: A National Survey* surveying tool and replication of its use to interview secondary school Administrators in the United States and I grant permission for the requested use. I am aware that the author of the research paper will be granting irrevocable non-exclusive licenses to St. Cloud State University and Library, and agrees to the terms of these licenses.

Signature of copyright holder or representative: Kent Coffee

Name: Kent Coffee

Date (yyyy/mm/dd): 6/16/17

Address: P.O. Box 9705

City: Postal Code: Miss State, MS 39762

Appendix C: MASSP Endorsement

To Whom It May Concern,

The Minnesota Association of Secondary School Principals (MASSP), has agreed to sponsor the research being conducted by David J. Holler as part of the requirements for his Doctorate in Educational Leadership. Mr. Holler will be conducting a survey of head and assistant high school principals who are members of the MASSP. MASSP will be providing Mr. Holler with the e-mail contacts of our active members for the purpose of this survey. MASSP will also be providing an introductory letter when Mr. Holler launches his survey in the Spring of 2018 so that our members know that MASSP is in support of this research/survey.

If you have any questions please do not hesitate in contacting me.

Sincerely,

Dave Adney
Executive Director
Minnesota Association of Secondary School Principals

Appendix D: Informed Consent

Dear High School Principal:

I am a doctoral candidate in the Educational Leadership Doctoral program at Saint Cloud State University and I am researching cell phone policies and Minnesota high school principal perception of the impact of cell phones by students and staff on learning. I need your help and participation to complete this informative research. My dissertation is a replication of a study on principal perceptions of cell phone use in United States high schools completed in 2007 by S. John Obringer and Kent Coffey from Mississippi State. The study will compare the survey results of Minnesota principals in 2018 to the results of the original study in 2007 to determine changes over the past 11 years.

The results of the study will be shared with MASSP members. The MASSP Board of Directors has endorsed this study with the expectation that it will provide valuable information for you to create informed school cell phone policies in the future.

I am requesting all MASSP member principals in the state of Minnesota to please take approximately five minutes of your time to take this survey. Participation is completely voluntary and the data you provide is confidential and anonymous. The responses you give may not be linked to you. You may withdraw at any time by discontinuing answering the survey questions. If you do not wish your survey answers to part of the collected data, do not submit your answers. If you consent to participation, please follow the link below.

Your time demands are high and your time is in short supply so thank you so much in advance for your participation and giving of your time. If you have any questions or require further information, please do not hesitate to contact me using the phone number or email listed below or contact my advisor Dr. Roger Worner using the phone number 612-719-5857. You will be given access to the information upon completion of the project and will be distributed through MASSP. Thank you again.

David Holler
Buffalo Community Middle School
Buffalo, MN 55313
763-682-8220
612-865-2115
dholler@bhmschools.org
david.j.holler@gmail.com

Appendix E: First Letter to Survey Participants

Dear MASSP member,

The Minnesota Association of Secondary School Principals, (MASSP) has agreed to sponsor the research being conducted by David Holler as part of the requirements for his Doctorate in Educational Leadership. David will be conducting a survey of head and assistant high school principals who are members of the MASSP to ascertain their perceptions of the level of effectiveness of their school districts' cell phone policy and the impact of teacher and student cell phone use in the classroom on student learning. Results of this survey will be made available to participants once David has completed his degree. We hope that these results will help school leaders create more effective school cell phone policies for teachers and students.

The link to the survey is listed below. All responses are anonymous, and the survey will take ten minutes or less.

Survey Link
https://www.surveymonkey.com/r/9BQ5HB3

Sincerely,

David Adney
Executive Director
--
Minnesota Association of Secondary School Principals
1667 Snelling Avenue N, Suite C-100
St. Paul, MN 55108
651-999-7333 phone
651-999-7331 fax

Appendix F: Second Letter to Survey Participants

Dear Fellow MASSP Member:

As an SCSU doctoral candidate in the Education Administration and Leadership program, I am seeking your needed assistance with my research project. If you have not already taken the survey, I would greatly appreciate five minutes of your time to complete the survey below by Friday, June 15.

Your input on the survey will help determine principals' perceptions of the impact of cell phones in Minnesota high schools. The results may be used in the creation of data driven school cell phone policies.

(Survey Link)

Thank you for your time and consideration.

David Holler
St. Cloud State University Doctoral Candidate
Buffalo Community Middle School

Appendix G: Third Letter to Survey Participants

Dear Colleagues:

Thank you to those who have previously taken the survey on Cell Phones in Minnesota High Schools. The study is still in need of additional participants. The survey has taken respondents less than five minutes.

Monday June 25 will be the last day to participate. Thank you for your consideration.

Dave Holler
St. Michael Albertville Middle School East
Dean of Students & Activities Director