Ohio Principals with Students in Grades 6 through 12 and Their Perceptions and Procedures on Student Cell Phone Use within Their Schools

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Ohio Principals with Students in Grades Six through Twelve, and Their Perceptions and Procedures on Student Cell Phone Use within Their Schools

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ABSTRACT

School officials have debated the pros and disadvantages of students using cell phones in school. To examine the influence of student cell phone use on academics and conduct, Ohio high school and middle school administrators (6–12) were surveyed on their policies and perceptions of cell phone use in their schools. The research also examined the relationship between these perceptions and the consequences for breaking school cell phone policies and the administrators' age, experience, and school typology. The survey was distributed to 1,978 principals and assistant principals from the Ohio Association of Secondary School Administration.

Almost every district has cell phone rules and regulations. The principals in the study agreed that cell phone use impacts academic achievement. The principals believed that cell phone use led to multiple codes of conduct violations. No association existed between age, gender, and experience and principals' perceptions of the percentage of negative effect on student academic achievement and violations to the code of conduct. Also, it was found that there was no statistically significant difference in the principals' perceptions of the percentage of students who violated their school's student code of conduct and had a negative impact on academic performance due to their cell phone use across school typologies. The principals who replied expressed that cell phones may help students organize, improve academic engagement, access information, and develop 21st-century skills. They also detailed that cell phones are addicting, distracting, and lead to cheating and harassment. Because school regulations controlling student cell phone use are often restrictive, research on various school policies and cell phone use is warranted.

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CHAPTER I

INTRODUCTION

The proliferation of cell phones throughout the world is ever-present in our everyday lives. According to Pew Research Center, the vast majority of Americans, 96%, now own a cellphone of some kind. The share of Americans that own smartphones is now 81%, up from just 35% in Pew Research Center's first survey of smartphone ownership conducted in 2011 (Mobil Fact Sheet, 2019). A growing share of Americans now uses smartphones as their primary means of online access at home. Today roughly one in five American adults are “smartphone-only” internet users, meaning they own a smartphone but do not have traditional home broadband service. Furthermore, reliance on smartphones for online access is especially shared among younger adults, non-whites, and lower-income Americans (Mobil Fact Sheet, 2019).

With the increase in cell phone ownership, the reliance and tendency to depend on these devices for all communication modes has increased. According to Clark,

> recent statistics show that more individuals communicate with cellular phones than with any other device. Many media analysts see mobile as its own medium with its defining characteristics. This handheld technology has people talking, texting, blogging and shopping, banking, and reporting. Individuals are so dependent upon phones that the device has become critical in many aspects of everyday life. (Clark, 2013, p. 1)

This reliance on cell phones to communicate and access information has led these devices to become a distraction to other activities in our daily lives and, in some cases,

has led to an addiction to continually being connected to our cell phones. Thornton et al., 2014) (stated that "the diminished performance observed with the cell phone's presence is indicative of attentional and cognitive deficits, just as it is with distracted driving" (p. 1). Although rules and regulations have been put in place to restrict cell phone use while driving, in classrooms, and in the workplace, if the mere presence of the cell phone has the potential to be distracting, then it may necessitate more of an “out of sight, out of mind” requirement in some instances (Thorton et al., 2014). Kruger and Djerf (2017) hypothesized that phantom cell phone experiences are instances when mobile cell phone users perceive ringing, vibrations, or visual stimuli indicating an incoming call or message. Yet, no call or message registers on the phone (Kruger & Djerf, 2017). Also, Peraman and Parasuraman concluded that mobile phone addiction has to be considered a dependence syndrome, and preventive measures have to be undertaken to avoid the greater risk of psychological illness among young generations. They believe it is the right time to initiate preventive measures against mobile phone mania among students and public health without further delay. Everyone has to accept that relationships with mobile phones are risky for anyone, and it can steer us into "mobile phone mania" or "nomophobia," a psychological disorder that is equally dangerous as similar to narcotic drug addictions (Peraman & Parasuraman, 2016, p. 200).

With this reliance on cell phones for communication and receiving information and the evidence that these devices can be highly distractible and potentially addictive, it leads to the question that if school-age children own these devices, what are the effects of this ownership on their academic performance in school.

According to Common Sense Media (2019), ownership has risen dramatically when it comes to school-age children. Cell phone ownership has significantly increased, even among the youngest tweens. Nearly one in five 8-year-olds (19%) have their smartphone, rising from 11% in 2015. Smartphone ownership has grown substantially over the past four years among all ages, increasing from 24% of all 8- to 12-year-olds in 2015 to 41% today and from 67% to 84% among 13- to 18-year-olds (Rideout & Robb, 2019). This is an increase of 17% in four years.

In addition to the number of cell phones in Americans and their children's hands, smartphones' technological advancements have essentially made the devices into handheld mini-computers. Text Request details the significant difference between smartphones today and in the past. From 2007 to 2018 there is more memory; devices are far faster and more powerful; you can use multiple applications at the same time; cameras are high definition; music and video streaming are easy as well as online gaming; and the battery lasts for days instead of minutes or a couple of hours (Andrew, 2018). As technology advances for cell phones, these devices can become even more distractible and potentially addictive.

Views in regards to smartphones and their impact on society are generally positive. In fact, according to the Pew Research Center, when it comes to the positive impacts of cell phone ownership, fully two-thirds (65%) of cell owners say that mobile phones have made it a lot easier to stay in touch with the people they care about, while just 6% say that their phones have not improved their connections with friends and family at all. Roughly half of the cell owners say that their phone has made it somewhat easier to

plan and schedule their daily routine and be productive while doing things like sitting in traffic or waiting in line (Smith, 2012). So with these generally positive views relative to cell phones, restricting the use of these devices can be a challenge.

Statement of the Problem

Recently, due to the potential for cell phones to distract students, there has been a push to ban their use in schools. In July 2018, the French government passed a law banning cellphones in schools. According to CNN.com, the law passed 62-1 (Smith, 2018). A study published by the London School of Economics by Beland and Murphy (2015) found where schools had phone bans, students earned higher test scores and that low-performing students benefited the most. "Restricting mobile phone use can be a low-cost policy to reduce educational inequalities," concludes the study (Beland & Murphy, 2015, p. 1). Another study published in the Journal of Communication Education by Keznekoff and Titsworth found that students without mobile phones performed better in several different areas. They wrote down 62% more information in their notes, were able to recall more detailed information from class, and scored a full letter grade-and-a-half higher on a multiple-choice test than those who were actively using their mobile phones (Kuznekoff & Titsworth, 2013). Research published by the University of Chicago found that even if cell phones are turned off, turned face down, or put away, their mere presence reduces people's cognitive capacity (Ward et al., 2017).

There have been several other studies evaluating the adverse effects of cell phones in classrooms. Rosen detailed that students who texted frequently following a videotaped lecture compared to others who did not score significantly lower on a recall test (Rosen et

al., 2010). Kuznekoff, Munz, and Titsworth found in their research that sending/receiving messages unrelated to class content negatively impacted learning and note-taking (2015). In contrast, related messages did not appear to have a significant negative impact (Kuznekoff et al., 2015). Felisoni and Godoi (2018) discovered a high correlation between cell phone usage and academic performance. Every 100 minutes spent using the device daily corresponded to a reduction in a student's position at the school's ranking of 6.3 points, ranging from zero to nearly 100.

Moreover, if we consider usage during class time only (as opposed to during free time and weekends), the effect was almost twice as high (Felisoni & Godoi, 2018) Baert et al. (2020) concluded that a one‐standard‐deviation increase in daily smartphone use yields a decrease in average exam scores of about one point (out of 20). When relying on ordinary least squares estimations, this effect's magnitude is substantially underestimated (Baert et al., 2020).

Others have presented evidence that mobile devices can be used to help students with communication difficulties (Tyma, 2011), induce interactions between students and the teacher in large classes (Barak et al., 2006), and increase the students' interest in the subject and their general academic achievements (Siegle & Foster, 2001). Johnson, O'Bannon, and Bolton stated that teachers identified student engagement and motivation as the primary benefits of using cell phones as an educational tool in the classroom (Johnson et al., 2013).

In 2015, New York City Mayor Bill de Blasio lifted a ban on cell phones in New York City schools by his predecessor, Michael Bloomberg. Like many other parents, he

said that he and his wife, Chirlane, gave their kids cell phones to stay in touch with their family. He also raised concerns that the ban was unequally enforced across schools. "Parents should be able to call or text their kids," de Blasio said in 2015. "Lifting the ban respects families, and it will end the unequal enforcement that has penalized students at so many high-needs schools. We are giving educators the tools and the flexibility to make this change responsibly" (Taylor, 2015, p. 19).

Advocates, like Alan November, for using technology such as cell phones in schools believe that these devices could enhance or benefit students' academic experience. November thinks that "if we could get past our fear of the unknown and embrace the very tools we are blocking (which are also essential tools for the global economy), then we could build much more motivating and rigorous learning environments" (November 2017, p. 2). He further stated that these tools could be a significant distraction from learning or be a significant catalyst. It will be a courageous educator who works with students to explore these tools' power and empowers students to be lifelong learners and active shapers of a world we cannot yet imagine (November, 2007).

Finally, some say that enforcing cell phone bans merely is impossible. Anita Charles, Director of Secondary Teacher Education at Bates College, has observed classrooms and analyzed technology policies for years. In 2017, she wrote a chapter titled," 'There's a relationship': Negotiating cell phone use in the high school classroom" in ``Researching New Literacies: Design, Theory, and Data in Sociocultural Investigation. "I found that when schools attempted a blanket policy, invariably, it was

unenforceable," she said. "Teachers and students developed workarounds" (Knobel & Lankshear, 2018).

With the increase in ownership of cell phones among our school-age children in the United States and the increasing capabilities of these devices, it leads to the question of what impact the devices have on our children's academics and behavior in school. Can these devices be used to enhance the educational experience of students in school? Do the possession and use of a cell phone in school cause enough distraction or disruption to impede learning? Do the possession and use of these devices cause discipline and behavior problems in schools? And finally and more specifically, does the school principal and the policies and structures that they put into place to manage these devices play an important role in the positive or negative effects of these cell phones in schools?

Purpose of the Study

The purpose of this study was to measure, through a survey, Ohio high school and middle school principals' (grades 6-12) perceptions of student cell phone use within their schools and its effects on student academics and behavior. The research sought to examine if there is a relationship between these perceptions and the consequences administered for violations of the school cell phone policies and the age, years of experience of the principals, and typology of the school that they lead. A study of cell phone use in schools in 2007 concluded that most high schools have rules related to cell phone use by students. The study also concluded that parents usually accepted the cell phone usage policy of the school and that punitive measures varied from a slight reprimand to confiscation of the cell phone for improper cell phone use by students

(Obringer & Coffey, 2007). Perceptions of principals regarding cell phone use by students and its effect on student learning were examined. This study aimed to replicate portions of the 2007 Obringer and Coffey study. The study also expounds on Holler's dissertation research in 2019 on the perceptions of high school principals in Minnesota on cell phone use within their schools (Holler, 2019). Unlike Obringer's and Coffey's, and Holler's analysis, this research will focus on high school and middle school principals, grades 6-12, in the state of Ohio. This research also considers the age of the school principals, their years of experience as school administrators, and the typology of the schools in which they are employed.

Theoretical Framework

Many studies, such as the one conducted by Beland and Murphy, detailed the negative impact of cell phone use in schools. Beland and Murphy conducted a survey in 2015 in which they investigated the effects of banning cell phones on high stakes student test scores in England. They contacted 337 schools in four English cities regarding their cell phone policies and then combined it with administrative data on educational results. Their main results were that banning mobile phones significantly increases student performance by approximately 6.41% of a standard deviation. (Beland & Murphy, 2015). Other studies such as the research completed by Thomas, O'Bannon, and Britt reviewed teacher perceptions of mobile phones in the classroom. Thomas et al. examined the perceptions of 1,000 teachers in Kentucky and Tennessee to determine their support for the use of cell phones in the classroom and their perceptions of the cell phone features that are beneficial to school-related work and the instructional barriers to mobile phone

use. The teachers identified cheating, access to inappropriate information on the Internet, cyberbullying, and disruptions as the primary barriers to using cell phones in the classroom. The teachers perceived access to the Internet, educational apps, the calculator, the calendar, and the ability to play a podcast as the most beneficial features/functions of mobile phones for classroom use (Thomas et al., 2014).

This research was quantitative and is from middle and high school principals' perspectives. Different from Holler's study, in which he surveyed Minnesota high school principals on their viewpoint of cell phone policies in their schools on student and teacher use, this study investigated middle school principals as well. Also different from Holler's research, this study considered the age, experience, and demographics of the school that the principals were employed in and their relationship with the principals' views on student cell phone use and the consequences that they administer for the violation of the policies on this use (Holler, 2019).

Research Questions

The following research questions will be addressed in the study:

1. What is the percentage of schools with written policies for cell phone use within the schools for students?
2. What percentage of schools administer progressive discipline for violations of their policy on student cell phone use?
3. As perceived by middle and high school principals in Ohio, what are the relationship between student cell phone use on academic performance,

violations to the student code of conduct, and the number of consequences administered to students?

4. What is the relationship between age, gender, experience, and the principal's beliefs on student cell phone use?
5. What is the relationship between a school's typology and a principal's beliefs about student cell phone use?

Methodology

The methodology for the research was a quantitative study using survey questions. Middle and high school principals (grades 6-12) were surveyed from Ohio who were employed and members of the Ohio Association of Secondary School Administrators. Using an online Likert scale survey administered by email, the principals were asked their age, years of experience in administration, and the socio-economic characteristics of their school district. A Likert scale is a close-ended, forced-choice scale used in a questionnaire that provides a series of answers that go from one extreme to another. Likert scales enable researchers to collect data that provides nuance and insight into participants' opinions (Vinney, 2019). The survey also asked the principals their views on student cell phone use and its effects on academics and student behavior as well as the frequency and types of consequences associated with violations to the policies on student cell phone use.

Assumptions of the Study

The following were assumptions of the study:

- High school and middle school students in the principal's schools use cell phones at a rate consistent with other teenagers in the United States of America.
- High school and middle school students in the principal's schools use their cell phones for non-school-related purposes at a rate consistent with teenagers in the United States of America.
- Survey participants will answer questions truthfully.
- Cell phones are used by a high percentage of students in the principals' schools.

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 6-12 middle and high school principals in Ohio. Middle and high school principals in Ohio were surveyed because this area comprises high schools and middle schools from rural, suburban, and urban school districts. Using this geographical area for the research gave perspectives on student cell phone use in schools from high school and middle school principals with different backgrounds from various schools with different socioeconomic backgrounds.

Definition of 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).

BYOD/BYOT - stands for Bring Your Own Device/Technology, which is a movement where school districts, schools, and teachers are encouraged to allow students to bring and utilize the technology they already have. Whether it be a Phone, iPod, iPad, Kindle, laptop, or other devices, they have it, so let them use it. It refers to children bringing their own technology like smartphones, tablets, and laptops for educational use and improvements in their learning processes. (*What is BYOD/BYOT?*, 2013)

Cell Phone - a phone that is connected to the phone system by radio instead of by a wire and can be used anywhere where its signals can be received (*Cambridge Dictionary*, n.d.).

Cyberbullying - Cyberbullying involves the use of information and communication technologies, such as e-mail, cell phone, and pager text messages, instant messaging, defamatory personal websites, and defamatory online personal polling websites, to support deliberate, repeated, and hostile behavior by an individual or group that is intended to harm others (Willard, 2004).

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 (*Cambridge Dictionary*, n.d).

Middle 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 5 through 8 or 6 through 8 (Cambridge Dictionary, n.d.).

School Board Policy - Board policies are statements that set forth the purposes and prescribe in general terms the organization and program of a school system. They

create a framework within which the college president or superintendent and his/her staff can discharge their assigned duties with positive direction (Oregon School Boards Association, n.d.).

Sexting - the activity of sending text messages that are about sex or intended to excite someone sexually. (*Cambridge Dictionary,n.d.)*

Smartphone - a cell phone that can be used as a small computer and that connects to the internet (*Cambridge Dictionary, n.d.)*

Texting - the activity of sending text messages on a mobile phone. (*Cambridge Dictionary n.d.)*

Summary

With the rapid development and expansion of multiple forms of technology and who has access to it, school administrators are challenged to develop policies and practices to capitalize on student use of cell phone technology in schools or limit the use of these devices. This research hoped to expand on the current knowledge base regarding school administrators' attitudes and beliefs toward student cell phone use in schools and the frequency and types of consequences administered for violations of the policies for student cell phone use. With an ever-increasing number of students who own cell phones, administrators are faced with the challenge of designing a policy that balances discipline requirements with the appropriate use of cell phones within their schools. This study attempted to find insights from high school and middle school principals on their perspectives on student cell phone use and the relationship to their views on their background and in the demographics of their school.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The use of technology has become essential in our lives. Whether it is how we receive our news, communicate with our friends and family, or function in our careers, it is a presence in our lives. This presence is also evident in the lives of our children. According to the Pew Research Center, more than a third of parents with children under 12 claimed that their children started using a smartphone before five years of age, and one in five children under the age of 12 have their own smartphone. A portion of parents states that their child under 12 uses social media; usage varies by child's age and parents' education level (Auxier et al., 2020).

When it comes to children over 12 years of age, most middle and high school teens, 88%, have access to a computer at home (Anderson & Jiang, 2018). Access to computers varies by family income and level of education. Almost all teens, 95 percent, aged 13-17 own a smartphone. Most teenagers (84%)—particularly boys (92%)—have or have access to game consoles (Anderson & Jiang, 2018).

Due to technological devices' ubiquitous nature in our children's lives, our children experience negative and positive effects. The frequency and methods that children use these devices impact their emotional and social development and their academic performance in school. Technology is increasingly part of our children's lives. In 2019 Common Sense Media (Rideout & Robb, 2019) conducted a nationally representative survey of more than 1,600 U.S. 8- to 18-year-olds about their use of and

relationship with media. The survey covered their enjoyment of various media activities, how frequently they engaged in those activities, and how much time they spent doing so. The data are presented for two age groups: tweens (8- to 12-year-olds) and teens (13-18-year-olds). The survey addressed all media types, from reading books in print and listening to the radio to using social media, watching online videos, and playing mobile games. It covers young people's interactions with media technologies ranging from television sets and video game consoles to virtual reality headsets and smart speakers. The key finds of this study relative to media and technology use are:

- On average, 8- to 12-year-olds in this country use just under five hours of entertainment screen media per day (4:44), and teens use an average of just under seven and a half hours (7:22)—not including time spent using screens for school or homework.
- Online video viewing is through the roof. More than twice as many young people watch videos every day than did in 2015, and the average time spent watching has roughly doubled. The percentage of young people who say they watch online videos "every day" has more than doubled among both age groups, going from 24% to 56% among 8- to 12-year-olds and from 34% to 69% among 13 18-year-olds.
- There has been a large drop in the amount of time both tweens and teens spend watching TV on a television set. Among tweens, the percent who say they enjoy watching TV "a lot" has dropped from 61% to 50%, and among teens from 45% to 33% over the past four years.

- By age 11, most (53%) kids have their own smartphone, and by 12, more than two-thirds (69%) do.
- There are substantial differences in the amount of screen media young people use based on socioeconomic status. Tweens from higher-income homes use an hour and 50 minutes less screen media per day than those from lower-income households (3:59 vs. 5:49). The difference among teens is similar (an hour and 43 minutes a day, from 6:49 among higher-income families to 8:32 among lower-income homes).
- The amount of time devoted to social media has remained steady, while the age at which young people first start using social media varies widely. Overall, the average amount of time teens report spending with social media each day has remained nearly the same: 1:11 a day in 2015 and 1:10 a day in 2019, although the proportion who say they use it “every day” has increased from 45% in 2015 to 63% in 2019.
- Despite the new affordances and promises of digital devices, young people devote very little time to creating their own content. Screen media use continues to be dominated by watching TV and videos, playing games, and using social media; digital devices for reading, writing, video chatting, or creating content remain minimal. The vast majority of young people don’t enjoy doing the types of activities that involve interacting with their devices to create their own content.

- Boys and girls have vastly different tastes in media. Seventy percent of boys (age 8 to 18) say they enjoy playing video games “a lot,” compared to 23% of girls. Forty-one percent of boys play video games “every day,” compared to 9% of girls. And on average, boys spend 1:19 a day playing video games more than just 14 minutes a day than girls. Seventy-three percent of girls (age 8 to 18) say they enjoy that “a lot,” compared to 59% of boys. Overall, girls enjoy music (a 14-percentage-point gap), reading (11 points), and television (5 points) more than boys. Boys are more likely to enjoy video gaming (a 47-percentage-point difference), computer games (22 points), mobile games (13 points), and watching online videos (11 points).
- Young people are more than twice as likely as they were four years ago to say that they use computers for homework every day. Twenty-seven percent of tweens use computers for homework every day, as do nearly six in 10 teens (59%).
- The digital divide is still real. Among all 8- to 18-year-olds, there is a 21-percentage-point gap between children from lower- and higher-income homes’ access to a computer in the home (73% vs. 94%). However, that is down from a gap of 28 percentage points in 2015.
- The vast majority of young people don’t use tools to track their screen time—nor do their parents. Among those with their own mobile device, just 15% of tweens and 12% of teens say they use an app or a tool to track their device time (see Figure N). Only about one in four tweens (28%) and even

> fewer teens (14%) with a phone or tablet say their parents use such a tool to track the child's device time. However, when it comes to monitoring what young people are doing on their devices, parents seem to be more engaged. Among young people who own a mobile device, half (50%) of tweens and a quarter (26%) of teens say their parents use some type of app or other tools to monitor what they do on those devices.

With so many children and adolescents in possession of technological devices, including cell phones, and familiar with their uses, how can principals use these conditions to educate their students better? Are there policies and procedures in school districts that allow for the use of these devices for educational purposes, given some of the negative impacts of technological devices on children and adolescents? What are the perceptions of these policies and procedures of principals regarding their effectiveness and impact on the educational environment in their schools?

Theory

The research theory is based on research by Obringer and Coffey (2007). Obringer and Coffey surveyed high school principals in the United States in the study *Cell Phones in American High Schools: A National Survey*, using a 19-item survey designed to research school cell phone policies, teacher cell phone use, and school safety issues involving the use of cell phones. Based on the survey outcomes, the following conclusions were reached:

- Nearly all schools/districts have a written cell phone policy, but these policies primarily address the use of cell phones by students. The policy will likely

need to be revisited as cell phone features increase (e.g., storing documents on them).

- Almost all schools allow teachers to use cell phones. This is potentially problematic in that many businesses (e.g., Microsoft) either prohibit or place significant limitations on the use of a cell phone by employees during working hours.
- Perhaps the most common feature of school cell phone policies is that students are banned from using school devices, and even bringing cell phones to schools is strictly prohibited in some instances.
- Responding principals assumed that teachers used cell phones for purposes other than for business related to school.
- Responding principals believed that due to educators' use of cell phones, instructional time is not lost.
- To compare results with the study of Obringer and Coffey (2007), the study will replicate and, in some cases, modify survey questions from the Obringer and Coffey study. The researcher will create a revised survey.

The research that will be conducted in this study is focused on student cell phone use, not teachers. The survey will be modified to solicit the perspectives from high school principals in Ohio on their views on cell phone use and cell phone policies within their schools relative to students only.

Positive Impact of Technology on Children

Many studies have detailed the benefits of students and teachers using technology in schools. One of these benefits is increased student motivation. The use of technology by teachers and students can also increase students' motivation to learn.

> The use of technology is often highly motivating to adolescents in terms of getting them to read and write more carefully and with more effort. The ability to revise on the computer, add effects (color, graphics, sound) to presentations, and code or mark text using word processing features such as highlighting motivates many students, especially when this capability is combined with an authentic purpose to read and write. Some students are much more likely to persevere with skill development if it is presented through a computer program or to complete an inquiry assignment if it is structured as a Web quest. (Irvin et al., 2007, p. 43)

Now that more students have access to technology and it is more mobile in nature, students are even more motivated to use them. Students are extrinsically driven when mobile communication tools are paired with Internet tools, such as email or online forums (Rau et al., 2008). Miller and Cuevas' (2017) research provides some promising findings of students' motivation when using mobile devices. The study revealed a significant improvement in learning by students when using mobile devices relative to paper learners. This increase in motivation to learn created by mobile technology can lead to gains in academic achievement.

In addition to an increase in student motivation to learn, there is also a noticeable shift in students' involvement in learning from mobile devices. By incorporating mobile

devices into instruction, there is a significant shift in students' enthusiasm toward academics. Overall, students' enthusiasm and participation in incorporating mobile devices into the classroom environment has dramatically improved (Miller & Cuevas, 2017).

Engagement

Technology is one way to increase student engagement. Technology increases the effort and time students participate in learning activities emotionally (positively impacting attitudes and interests towards learning) and cognitively (mental investment to comprehend content). Whether technology is integrated during class time or after school hours, students are given more opportunities to interact with instructors, collaborate with peers, and engage in the learning process. Specific technology examples that may enhance student engagement include web-conferencing software, blogs, wikis, social networking sites, and digital games (Schindler et al., 2017). Although no one gadget or piece of software is a silver bullet, some psychologists see tremendous potential in devices such as tablets and smartphones, instruments that children are comfortable with and, most significantly, find engaging in their everyday lives. (Collier, 2015).

The way the younger generation learns is now so distinct. With the internet and mobile devices, they learn in active and engaging methods. If these methods are accepted and encouraged, teachers can capitalize on their use to better engage students in the learning process and increase their motivation to achieve academically.

Better Spatial Skills

As careers in science, math, and engineering become more abundant and lucrative in our society, acquiring better spatial skills can help an individual advance in these career fields. Playing computer games improves your spatial abilities.

Improving spatial skills such as constructing puzzles is vital since children who perform well in spatial challenges are likely to achieve a high degree in science, technology, engineering, and mathematics (Temple University, 2012). Achtman, Green, and Bavelier (2008) discussed the potential of action video games to enhance visual-spatial skills. With experience in action video games, the most significant changes to visual perception are seen. Such games incorporate various factors that make for a comprehensive restructuring of visual functions when applied together. As such, they provide a rare opportunity to enhance our understanding of the factors fostering cognitive function and visual learning (Achtman et al., 2008). Subjects realized significant improvements in both spatial focus and mental rotation after only 10 hours of playing an action video game, with females gaining more than males (Feng et al., 2007).

Increased Cognitive Abilities and Computer Skills

Access to computers as educational software programs installed in these devices can lead to gains in computer application skills and cognitive abilities. Cristia et al. (2012) conducted a study of a one-to-one laptop program in primary public schools with low access to computers in Peru's rural areas. Using a mechanism by which clinical trial participants are distributed by chance to different groups, the initiative caused a significant increase in computers both at school and at home. The findings showed that

the initiative greatly improved access to computers. There were 1.18 computers per pupil in the treatment group, compared with 0.12 in the control schools during follow-up. This massive increase in access clarifies major gaps in use. Eighty-two percent of students in the treatment group reported using a school computer in the previous week, compared to 26% in the control group. There were also significant impacts on home computer use: 42% of the treatment group students reported using a home computer in the previous week versus 4% in the control community. Most students in the treatment group displayed general expertise in laptop operation in activities relating to core program processes (e.g., word processors) and searching for information on the computer.

The same study also detailed a small but positive impact on school performance and a more significant positive effect on computer-related cognitive capacity and competencies. An increase in cognitive ability occurred by using the programs included in the laptops. As measured by a coding and verbal fluency test, the increase in cognitive ability amounted to a gain of 5.1 months.

Increased Connectivity

Technology can extend how teenagers engage with their peers and the world at large. Socializing with people on social networks like Facebook, Instagram, or Snapchat, or playing immersive role-playing games with friends and individuals throughout the world are some of the many ways young people may feel connected socially (Felt & Robb, 2016).

Besides increasing the ability for young people to communicate with others throughout the world through social media, it is critical to have devices that connect to

the internet. Tweens and teens need to develop digital literacy because it encourages young people to be confident and competent in their use of technology in a way that will allow them to develop their subject knowledge by encouraging their curiosity, promoting their creativity, providing them with a critical framework for their emerging understandings, and enabling them to make discerning use of the increasing amount of digital knowledge (Hague & Payton, 2010).

Possessing devices connected to the internet is critical for students to receive timely knowledge and information on various educational topics. Without this ability, they miss out on information that is being created daily that can enhance their ability to learn and be creative. According to a 2017 IBM Marketing Cloud report, in the last two years alone, 90% of the data in the world today was generated, at 2.5 quintillion bytes of data per day. The report also stated that the data growth rate is likely to accelerate even more as new devices, sensors, and technologies emerge. Students need access to these devices and the Internet to enhance their education (Harbor, 2017).

Benefits of Technology in Schools

Academic Performance

The use of technology by students and teachers can also impact students' academic achievement. When students in high-poverty rural schools have greater access to new technologies and teachers who know how to use them, academic performance on math and science tests scores can increase (Blanchard et al., 2016). That is true even if teachers are not transforming the way they are teaching.

> Teachers who made even slight changes in their instruction by using new technologies reported increased student engagement . . . . Teachers were pleased

> that students were more excited about learning in STEM classrooms with technologies used by the students and that they were more active in classroom discussions and activities. (Packard, 2016)

J-PAL North America is a regional office of the Abdul Latif Jameel Poverty Action Lab (J-PAL), a global network of researchers who use randomized evaluations to answer critical policy questions in the fight against poverty. Their mission is to reduce poverty by ensuring that policy is informed by scientific evidence. J-PAL North America recently released a new publication summarizing 126 evaluations of different technology uses in educational settings. Drawing primarily from research in developed countries, the study looked at randomized evaluations and regression discontinuity designs across four broad categories: (1) access to technology, (2) computer-assisted learning or educational software, (3) technology-enabled nudges in education, and (4) online learning. The positive effects of using technology were evident in these evaluations. First, educational software (*often called computer-assisted learning*) programs designed to help students develop particular skills have shown enormous promise in improving learning outcomes, particularly in math. Targeting instruction to meet students' learning levels is effective in improving student learning. Still, large class sizes with a wide range of learning levels can make it hard for teachers to personalize instruction. The software has the potential to overcome traditional classroom constraints by customizing activities for each student. Educational software programs range from light-touch homework support tools to more intensive interventions that re-orient the classroom around software use. Second, technology-based nudges — such as text message reminders — can have meaningful, if modest, impacts on various education-related outcomes, often at low costs. Like text message reminders, low-cost interventions can successfully support students and families

at each stage of schooling. Text messages with reminders, tips, goal-setting tools, and encouragement can increase parental engagement in learning activities, such as reading with their elementary-aged children (Abdul Latif Jameel Poverty Action Lab (J-PAL) North America, 2019).

Smartphones in Schools

Concerning smartphone use in schools, today's smartphones offer endless possibilities for higher engagement, improvement of student understanding, and extension of learning beyond the classroom, thanks to an exponential increase in widespread availability and computing capacity, particularly if a student does not have the internet at home or attends a school where one-to-one computer use at school is not an option. Smartphones also provide teachers with an easy way to support and motivate learning and creativity among students while increasing motivation. Research shows that when learners are involved in their lessons, and when given a choice, they are almost always actively engaged with their phones, they are less likely to succumb to distractions. The objective is to provide students with ways to learn, collaborate, share, and create meaningful ways to use this favorite technology (Ehnle, 2020).

The Negative Effects of Technology on Children

With tweens and teens being more connected than ever, the impact of technology on their lives and development has led to some concerns. According to *Medical News Today*, overuse of technology can lead to depression, anxiety, social isolation, sleep problems, and reduced physical activity in children and teens (Johnson, 2020). Besides these conditions being a critical health concern, they can also have a major impact on how students perform academically and behave in school.

The Effects of Technology Use on the Brain

The frequent use of technological devices can impact school-age children's brains and how they engage in the learning process. Parts of the brain react to exciting things or give us pleasure, and other parts control our impulses; as children's brains develop, the balance between these two parts changes. As children become teenagers, they are more willing to take risks, explore new things, and are increasingly influenced by their friends. These brain changes also make it difficult to manage behavior and draw them to stimuli that deviate from the more appropriate or assigned task. By tapping into the balance between reward and power, children's use of technological devices can increase academic achievement by increasing student motivation and engagement. However, some technical characteristics may also facilitate inappropriate social interactions or make it very difficult to control impulses online (Magis-Weinberg & Berger, 2020). If principals and teachers can tap into the proper balance of technology use in schools, they can potentially enhance the learning environment.

The use of technology changes the brain. For example, as shown by functional magnetic resonance imaging (fMRI), the visual cortex's organization is changed by extensive childhood experience with the game "Pokémon," with distinct effects on visual object perception even decades later (Hoehe & Thibaut, 2020). As shown by diffusion tensor MRI, early extensive screen-based media use is significantly correlated with lower microstructural integrity of brain white matter tracts that help preschool language and literacy skills (Hutton et al., 2020, p. 4).

Adolescence is also a time of significant development, with marked changes in the brain areas involved in emotional and social behavior. Adolescence is also a substantial development period, with noticeable improvements in the brain regions involved in mental and social activity. The use of social media can have profound effects on emotional and social learning, e.g., as demonstrated by structural MRI, the size of an adolescent's online social network was closely linked to brain anatomy changes. The impact on these and many more brain-related phenomena of digital technology, both negative and positive, was elaborated on in the review by Korte, who provided a comprehensive overview of the field (Korte, 2020, p. 106). These brain changes affect how children learn and profoundly impact teacher instruction effectiveness and how students behave in school. Rowan (2014) explained that students' brains are still developing and malleable, so technology affects how their brains are wired differently. Brain scans indicate that the use of technology for more than five hours a day was consistent with the cognitive wiring of pathways associated with executive functioning (Rowan, 2014).

Further evidence of how technology and its use can alter a child's brain's make-up is detailed in a 2019 study in JAMA Pediatrics relative to gray and white matter in the brain. The central nervous system white matter regions overlap with the areas of gray matter. White matter refers to all brain and spinal cord areas that interact with the separate gray matter areas and between the gray matter and the rest of the body. The gray matter, in essence, is where the processing is performed, and the contact networks are the white matter (*My-MS.org: For Information on Multiple Sclerosis*, n.d.). Increased use of

screen-based media in the context of the American Association of Pediatric guidelines was associated with lower neuronal integrity of brain white matter tracts that support language, executive functions, and developing literacy skills. Lower scores on appropriate behavioral measures, controlling for age, were also attributed to screen use. Given that screen-based media use is ubiquitous and increasing in-home, childcare, and school environments for children, these findings suggest the need to further research the implications for brain development, especially during early childhood stages of dynamic brain growth (Hutton et al., 2019).

There is significant evidence that technological devices' frequent use can affect brain development in children. Due to this evidence, how do parents, teachers, and principals adapt their practices and behaviors to ensure a proper balance between using these devices and the possibilities that overuse may alter children's brains?

Effect of Technology Use on Sleep

The frequent use of technology can hurt the amount and quality of sleep a child gets. A recent study found a correlation between media and sleep. The research sample consisted of children and teenagers aged 5 to 17 years from several regions worldwide.

> More than five dozen cross-section or prospective retrospective trials investigated the association between screen time (i.e., television, laptops, video games, and handheld devices) and various sleep parameters. More than 90% of participants showed more screen time positively correlated with delayed bedtime and shorter average sleep time for children and teenagers. Computer use has been more consistently correlated with low sleep output than television, possibly because

> viewing television can be less engaging than computer-based tasks. Among studies of the relationship between television use and sleep timing and efficiency, >75% found connections between television and the lack of sleep. (Hale & Guan, 2015, p. 57)

A meta-analysis was conducted in other research to measure the links between technologies and sleep effects in adolescent participants. A meta-analysis was carried out on other studies to measure the connection between technologies and sleep effects in adolescent participants. Twenty-three research papers with sample sizes ranging from 295 to 73,238 subjects were used for the study for 253,904. This broad study provided empirical evidence for evaluating the contribution of technology overuse to the poor performance of sleep. In the first case, the excessive use of technology will disrupt sleep by directly shortening or interrupting sleep time. Secondly, before bedtime, internet content can be mentally stimulating and affect the mood. Third, circadian rhythm and physiological rest can be affected by the light emitted by the electronic screen. (Mei et al., 2018).

According to Stanford Medicine, sleep deficiency raises the risk that adolescents will experience multiple detrimental outcomes, including failure to focus, low performance, drowsy-driving events, anxiety, depression, suicidal thoughts, and even suicide attempts (Stanford University, 2015). Suppose the overuse of technology creates an environment where teens are not receiving quality sleep. In that case, the negative consequences can have a negative impact on their academics as well as their health.

Lower Attention Span

Technological devices such as smartphones, video games, and computers distract students and create attention span deficits. According to research conducted by the University of Southern California, teenagers who spend more than two hours on school days participating in the non-educational usage of interactive media are more likely to experience attention deficiency and hyperactivity disorders than those who do not. This study showed that teenagers who are regular users of multimedia media are twice as likely to exhibit signs of attention-deficit/hyperactivity disorder (ADHD) as infrequent users. As researchers followed nearly 2,600 adolescents for two years, the correlation remains strong (University of Southern California, 2018). The National Institute of Mental Health describes ADHD as a brain disorder with symptoms that include a pattern of inattention, hyperactive behavior, and impulsiveness that interferes with functioning or development. According to the National Institutes of Health, it is a common mental disorder in children and adolescents and affects about 4% of U.S. adults (National Institute of Mental Health, n.d.).

Other researchers concentrating on the amount of time an individual uses various forms of technological media and correlating it with symptoms of ADHD found that they are linked. A meta-analysis of 45 longitudinal studies exploring the association between media consumption and activities associated with ADHD in children and adolescents was performed. The findings indicated a moderate, important relationship between media consumption and habits correlated with ADHD (Nikkelen & Valkenburg, 2014, p. 2228).

Risk of Depression

There is evidence that the use of technology, especially social media networking sites, can lead to symptoms of depression in adolescents. Time spent on social networking sites among high school students is linked to the increased risk for depression (Pantic et al., 2011).

Social comparison and feedback-seeking behaviors dependent on technology may be correlated with adolescent depressive symptoms, control for general technology use, and prior depressive symptoms (Nesi et al., 2017). Also, popularity and gender may play a role in this influence. The correlation between these behaviors and depressive symptoms is robust among adolescents and girls who are low in popularity. The results from research in 2018 illustrate the significance of recognizing how socializing through various social media platforms will interact with psychopathology's existing interpersonal models (Nesi & Prinstein, 2018).

Finally, social networking may serve as a relevant way young people experience the depressive symptoms and effects of poor quality relationships. Moreover, some preliminary evidence exists that some young people might be at greater risk than others. In particular, in negative social networking experiences, young people prone to negative thinking might be susceptible to experiencing symptoms of depression. However, additional evidence through future research studies may support this possibility. After social networking experiences, young people are vulnerable to greater depressive and negative thinking and may appear to feel more depressed. These results endorse such

depressive mood patterns as possible intervention goals that may decrease the risk of depression (Davila et al., 2012)

Social Interaction Issues

The increased use of technology, including social media, can lead to social isolation. In a nationally representative sample of young adults, social media's increased use was clearly and independently correlated with high perceived social isolation (Primack et al., 2017). Another study also recognizes social media's effects on enjoyment, substantiating that cell phone use undermines the enjoyment that people derive from their social experiences in the real world. A 2017 study by Dwyer, Kushlev, and Dunn detailed that phones caused people to feel distracted, minimizing how much they enjoyed sharing a meal with friends. Similar findings were achieved by asking individuals to share what they had been doing during the last 15 minutes of a meal and how they felt. When they were engaged in conversations, they felt more distracted in face-to-face interactions and had a less enjoyable experience if they had been using a smartphone. The use of a cell phone predicted distraction, which in turn expected greater boredom and worse overall lethargy (Dwyer et al., 2017).

Through their direct interactions with parents, other adults, and peers, children improve general communication, cognitive, and social skills. Children need face-to-face interaction to understand and use verbal and non-verbal communication, develop empathy, and practice turn-taking. Increased use of technology can cause social disconnection for both young and older children, negatively affecting social and relational skills development. Recent research has shown that screen time in toddlers is

adversely correlated with the growth of social skills. The more time they spend with computers, the more in communicating and interacting with others and compliance with instructions and desire to support others, their social development suffers. With more screen time activity, levels of disruptive social behaviors, such as being bossy or bullying, have been shown to increase (Carson et al., 2019).

The social disconnection issues often apply to older kids and teenagers. Time spent in-person with peers and adults declines as time spent on screens increases. This can lead to a sense of alienation and loneliness, with research finding that the highest rates of loneliness and depression are among teenagers who experience the least in-person contact and the most screen time (Twenge et al., 2019).

Obesity

Many observational studies find relationships between screen media exposure and increased risks of obesity. Randomized controlled trials of reducing screen time in community settings have reduced weight gain in children, demonstrating a cause-and-effect relationship. Current evidence suggests that screen media exposure leads to obesity in children and adolescents through increased eating while viewing; exposure to high-calorie, low-nutrient food, and beverage marketing influences children's preferences, purchase requests, consumption habits, and reduced sleep duration (Robinson et al., 2017).

Since there is a relationship between screen time and lack of sleep, studies suggest that chronic partial sleep loss is associated with the increased prevalence of childhood obesity. For example, a 20% increase in the risk of obesity/overweight is associated with

shorter sleep durations in children (Miller et al., 2017, p. 15). Physical activity is directly in competition with passive practices such as TV watching and computer/smartphone use (de Jong et al., 2011, p. 48). This physical activity substitution for prolonged screen time is detrimental to health and cognitive development. Therefore, a combination of sleep deprivation, physical activities being replaced by screen time, and unhealthy eating patterns may explain the increase in childhood obesity with the increased use of technology.

Cyberbullying

With the increase of cell phone ownership by school-aged children, incidents of cyberbullying have also risen. In 2018, Ipsos Global Advisor research, conducted in 28 countries, investigated cyberbullying among children. Cyberbullying is described as "willful and repeated harm inflicted through the use of computers and other electronic devices" (Hinduja & Patchin, 2010, p. 206). It found that since 2011, the number of parents who have confirmed having a child or knowing a child in their circle who has encountered cyberbullying has risen globally. Approximately 33% of parents of children between 12 and 17 reported having a cyberbullied child or knowing a child in their community. This is a percentage increase from 26% in a previous study back in 2011 (Ispos Public Affairs, 2018).

After cyberbullying incidents, most victims experience negative feelings, such as shame, concern, anxiety, depression, or loneliness (Hoge et al., 2017, p. 578). A recent meta-analysis of 131 studies identified the following key findings: most estimates of the prevalence of cyberbullying among adolescents fell between 11% and 48%, depending on

the concept of cyberbullying, group demographics, and the reporting time frame; there is a large degree of overlap between adolescents who bully others offline and those engaged in cyberbullying.

Another study by Carter and Wilson (2015) provided insights into adolescents' conventional bullying and cyberbullying trends. This research explored the incidence of bullying and cyberbullying among 367 adolescents aged 10 to 18 years who were attending schools and community groups in the Midwest United States in suburban and urban communities. The correlational model explored the everyday usage of technology by teenagers that could be used by cyberbullying peers, such as mobile phones, laptops, email, and the internet. Results showed that 30% of participants were harassed during school, and 17% were cyberbullied, with the most popular media employed by online social networking sites (68%) (Carter & Wilson, 2015)

Nomophobia

Adults and children alike have become increasingly dependent on their mobile phones. This dependency, referred to as *nomophobia*, can affect children's academic and social behavior. Nomophobia refers to discomfort, anxiety, nervousness, or anguish caused by being out of contact with a mobile phone. Generally speaking, it is the pathological fear of staying out of touch with technology (Bhattacharya et al., 2019, 1297). Compared to relatively long periods of computer-based internet usage, mobile smartphones allow shorter periods of use of several internet-based mobile applications ("apps"). Smartphone addiction is viewed as a technical addiction, identified as "non-chemical behavioral addictions involving human-machine interaction" (Sharma et

al., 2019, p. 232). The mobile phone has been identified as one of the 21st century's greatest non-drug addictions. One study determined that the prevalence of mobile phone dependency among adolescents in secondary school was 31.33%. Compared to females, male students were almost double the risk of mobile phone dependency (Nikhita et al., 2015).

This addiction to cell phones leads to the overuse of these devices. As detailed in research, the overuse of technology can lead to many potential health and psychological problems. These problems can have lasting effects on young people's development and significantly impact their behavior and academic performance in school.

Technology and Its Negative Effects on Learning

There is evidence that technology can enhance instruction and motivate students to be more engaged in the learning process. There is also significant evidence that children and adolescents' extensive use of technology can alter their brain development. In addition to this substantiation, there is evidence that technology can have deleterious effects physiologically and psychologically on people (Johnson, 2020). In the 36 member countries of the Organization for Economic Co-operation and Development (OECD), a study of millions of high school students found that those who used computers heavily at school do even worse in other learning outcomes, based on socioeconomic history and student demographics (OECD, 2015, p. 136). Further evidence in a report by the OECD in 2012 stated on the student assessment (PISA), in Korea, only 42% of students and 38% of students in Shanghai-China reported that they use school computers. Korea and Shanghai-China were among the top performers on the OECD Program for International Mathematics, digital reading, and computer-based mathematics tests.

By contrast, in nations where it is more prevalent for students to use the internet for schoolwork at school, the performance of students in reading declined from 2000 to 2012 on average. Where a school uses technology in its instruction, its effect on student performance is, at best, mixed. In reality, PISA findings do not show any appreciable improvements in reading, mathematics, or science student achievement in the countries that heavily invested in technology for education (OECD, 2015, p. 15)

According to other studies, U.S. college students who used laptops or digital devices performed worse on their exams (Payne Carter et al., 2016)). Eighth graders who have taken Algebra I online have done far worse than those who have taken the course in person (Heppen et al., 2011). Fourth graders who used tablets in all or nearly all of their classes, on average, had 14 points lower reading scores than those who never used them, a difference equivalent to a whole grade level. The gap was significantly more significant in some states (Bouygues, 2019). Raja and Nagasubraman (2018) concluded that information and communication technology (ICT) has led to declining writing skills, increased incidents of cheating, and a lack of focus by students (Raja & Nagasubraman, 2018).

Students have various technological devices, including cell phones. The possession of these devices can be both beneficial to their academics and experiences in school and create problems for their health and social life. Principals can influence how these devices are utilized in school.

The Principal as a Technology Leader

Past research has detailed the impact that school leaders can have on various technological device implementation and effects. According to Gibson (2001), preparing teachers for technology is not the number one issue in the effective integration of

educational technology into the learning environment, but the presence of informed and effective leadership (Gibson, 2001). Other researchers investigating factors that impact the effectiveness of technology on learning have found school leadership to be a critical factor (Anderson & Dexter, 2005). School leaders are instrumental in implementing and integrating technology in their schools as the holders of status and engagement with faculty and the larger community of parents and other stakeholders (Whitehead et al., 2003). Principals are responsible for leading, navigating, and changing schools to include modern, digital content. Administrators will have to tackle the pervasive existence of technology to lead effectively in the 21st century, introduce it into their schools to be used as a tool for learning, and satisfy students and teachers accustomed to using technology to learn both within and outside the classroom. (Schrum & Levin, 2012).

A school principal is instrumental in developing the school's culture. With this influence, the principal's attitude toward technology in instruction and their personal use of technology impact how teachers utilize technology throughout their school buildings. Furthermore, Grady (2011) highlighted the following information regarding aspects of the principal's role as a technology leader, teachers as key to technology implementation, the teacher-to-teacher model of professional development, and questions to consider:

- Establishing the vision and goals for technology in the school
- Carrying the technology banner in the school
- Modeling the use of technology
- Supporting technology use in the school
- Engaging in professional development activities that focus on technology and integration of technology in student learning activities

- Providing professional development opportunities for teachers and staff that emphasize the use of technology and that facilitate the integration of technology in student learning
- Securing resources to support technology use and integration in the school
- Advocating for technology use that supports student learning
- Being knowledgeable and supportive of national technology standards and promoting the attainment of the standards in the school
- Communicating the uses and importance of technology in enhancing student learning experiences to the school's stakeholder

Principals make a difference in how technology is implemented within their schools to enhance instruction. The most successful school leaders encourage an active learning process in which teachers are part of the learning community and share their experiences with others. It was inferred from the research that invested principals expect to incorporate new technology, are open to ideas, use a school atmosphere that facilitates interactive learning relationships with their teachers, and foster a learning environment beyond the classroom. Invested principals who directly help their students and inspire them will lead their teams to adopt new technology effectively (Keane et al., 2020).

The pervasive nature of technology must be considered (Christensen et al., 2018). The role of the principal as advocates for the use of technology in schools is to ensure student access, support educators in using technology in schools to advance learning; ensure that resources for supporting the effective use of technology for learning are sufficient and scalable to meet future demand such as connectivity to the Internet, and set goals to remain current on emerging technologies for learning. However, there is a dilemma when it comes to ensuring responsible online behavior, including the safe,

ethical, and legal use of technology, as well as creating policies that create an atmosphere within their school where technology is not a hindrance to learning (International Society for Technology in Education, 2020a).

Leadership and Technology Implementation

School leaders have a significant influence on policies and practices within their schools. This influence can impact technological devices' utilization by students and staff within their schools. According to the International Society for Technology in Education (ISTE), technology must be incorporated into teaching and learning and focus on utilizing technological devices in schools (International Society for Technology in Education, 2020). ISTE is an enthusiastic group of educators who believe in technology's power to improve teaching and learning, speed up creativity, and solve challenging educational problems. By offering practical guidance, evidence-based professional learning, virtual networks, and thought-provoking activities, ISTE inspires strategies and interactions that expand all learners' opportunities (International Society for Technology in Education, 2020). Principals can facilitate the instructional use of technology and impede technology's social aspects in their schools.

Relative to technology implementation in schools and the role of school leaders, ISTE has developed guidelines for education leaders that promote the adoption of the ISTE Student and Educator Standards and provide a structure for digital age learning instruction. The skills and behaviors needed for leaders to inspire teachers and make student learning possible are targeted by these criteria. They concentrate on some of today's most timely but enduring education topics: equity, digital citizenship, vision,

collaboration, system building, quality improvement, and professional development (International Society for Technology in Education, 2020). Principals can create an environment supportive of the ISTE standards and influence their teachers to foster technology's beneficial use in their schools.

The Principal and the ISTE Standards

According to the ISTE standards for educational leaders, principals are to be: advocates for the use of technology in schools to ensure students have access to technology and connectivity to the internet, support educators in using technology to advance learning, ensure that resources for supporting the effective use of technology for learning are sufficient and scalable to meet future demand, and set goals to remain current on emerging technologies for learning. Suppose principals are to live up to these standards. How do they accomplish this and at the same time ensure that they are promoting responsible online behavior, including the safe, ethical, and legal use of technology, as well as creating policies that create an atmosphere within their school where technology is not a hindrance to learning (International Society for Technology in Education, 2020b)?

The ISTE standards for Principals are

- Equity and Citizenship Advocates: Leaders use technology to increase equity, inclusion, and digital citizenship practices.
- Visionary Planner: Leaders engage others in establishing a vision, strategic plan, and ongoing evaluation cycle for transforming learning with technology.

- Empowering Leader: Leaders create a culture where teachers and learners are empowered to use technology in innovative ways to enrich teaching and learning.
- Systems Designer: Leaders build teams and systems to implement, sustain and continually improve technology to support learning.
- Connected Learner: Leaders model and promote continuous professional learning for themselves and others

The Principal and Equity and Citizenship Advocate

Principals create an inclusive school by ensuring physical inclusion, social-emotional participation, and learning opportunities in a rigorous, stimulating, and motivating environment. Through the relevant ISTE standards, all these elements of building equity's taxonomy can be enhanced by technology.

Aspects for leaders in this goal area include ensuring that all students have equal access to resources and have qualified teachers to use technology to benefit student learning. Promoting, modeling, and developing digital citizenship skills, including the safe and ethical use of technology resources and the active use of technology to contribute to society, are also leaders' tasks.

Principals may have a huge effect on how their schools are receptive to students who are members of disadvantaged groups (Gardiner & Enomotp, 2006). An environment to ensure equal education for everyone can be inspired or suppressed by principals (Theoharis, 2008). Principals who foster academic opportunities build an environment and equity climate via their educational leadership, partnership, lobbying,

progress promotion, and participation in credible, evidence-based practices (Theoharis & Hadix, 2011).

The Principal as a Visionary Leader

Principals have a significant influence on school culture. The ISTE standards address the need for leaders to involve all stakeholders in creating a shared student learning vision informed by best practices based on the study. The ISTE requirements for principals indicate that they need to cooperate in implementing technology-related strategic planning priorities and actively track progress, establishing an ongoing learning cycle. Budiman (2020) concluded that:

- there is an influence of principal leadership on teacher performance
- there is an influence of the principal's leadership on achievement motivation
- there is an influence of the supervision of the principal on teacher performance
- there is the influence of the supervision of the principal on achievement motivation
- there is an influence of achievement motivation on teacher performance
- there is an indirect effect of the principal's leadership on teacher performance through teacher achievement motivation
- there is an indirect effect on the supervision of principals on teacher performance through teacher achievement motivation (Budiman, 2020, p. 164).

This influence on a school culture by the principal is no different when it comes to technology integration. Gurfidan and Koc's (2016) study demonstrated that school culture indirectly influences technology integration through the mediation of technology leadership and support services. A positive school climate may result in practical leadership behaviors and adequate support and encouragement for technology integration. Therefore, the study suggested that educational policymakers and administrators create a supportive and positive school environment and culture with a shared vision if they want to increase educational technology use (Gurfidan & Koc, 2016). Thannimalai and Raman (2018) concluded a significant relationship is needed between the principal's technology leadership and the teacher's technology integration in the classroom. Principals make a difference in how technology is implemented and utilized within their schools.

The Principal's Role as an Empowering Leader

The strongest leaders inspire and can share leadership with others. The ISTE standards encourage administrators to provide teacher discretion, leadership, and tailored professional development to create overall capacity.

In terms of technological utilization, school administrators are also expected to foster a creative and inclusive faculty atmosphere. This culture should facilitate workers' ability to use technology to address a diverse range of students' needs and motivate them to create lessons that provide students with personal, real-time feedback on their success.

Principals have an impact on teacher leaders. Principals play a significant role. The emerging themes show that when principals participate in unique and desirable practices, coaching leadership can take place, and a culture of empowerment can be

created. This implies that principals can contribute to teachers' leadership within a school environment by their everyday activities and interactions and simultaneously enhance the school's atmosphere (Maxfield & Flumerfelt, 2009).

Introducing new technology in schools depends on how principals want to collaborate with their workers in implementing digital technologies and assist them. Careful thought and planning for integrating technology allow school leaders to feel confident about the initiative and empower and encourage teachers in their classrooms to use emerging technology. The most successful school leaders inspire an active learning process where teachers are part of a learning community and share their experiences with others. The invested principals plan to implement emerging technologies, are open to new innovations, use a school culture that promotes collaborative learning partnerships with their teachers, and promote a learning community that goes beyond the classroom. Invested principals who help and inspire their teachers directly will guide their team to the effective adoption in the classroom of new technologies. Invested principals exercise leadership by taking action to build a culture of trust (Keane et al., 2020, p. 5336).

The Principal as a Systems Designer

This ISTE standard encourages leaders to create sustainable teams and systems, to work together to develop technology infrastructure, secure current and future capital, and establish long-term partnerships with school partners and community partners to maintain all gains over the long term (Office of Educational Technology, n.d.)

Nurturing the systemic thinking and actions of principals concerning the range of elements that interact within the complicated, changing school environment—including

curriculum, training, evaluation, interpretation of information, the teamwork of employees, and policy—may improve their ability to meet the very high expectations of today's era of responsibility. Therefore, principals are encouraged to develop their perspective on systems-thinking, which can help them fulfill their role in instructional leadership (Shaked & Schechte, 2019). System thinking helps the development of high-performance schools, and therefore, it offers schools a way to meet high expectations in this era of accountability. For this reason, mastery of the systems thinking approach and its skills' acquisition is vital for today's school principals (Shaked & Schnecter, 2013)

The Principal and a Connected Learner

The ISTE standards require administrators to set personal and professional development goals to keep informed of technological developments, communicate with fellow leaders, demonstrate effectiveness through reflective practice, and as a leadership strategy to seek quality improvement continuously.

Lifelong learning is essential for all, but it is significant for principals and teachers who need to model their students' lifelong learning skills and work in a profession that changes in response to innovations. Modern technologies, especially web technologies, empower educators to engage in lifelong learning in unprecedented ways by improving access to resources and promoting social connections between distance learners (Kimmons, 2020). For the performance of a principal, the leader-as-learner mindset is critical. A leader who is prepared to learn has an exceptional chance to

succeed. Therefore, as leaders ask questions and ask for suggestions, they show the ability to learn, not a weakness or ignorance, but a power (Robbins & Alvy, 2014).

Technology in Schools

As previously discussed, there are both positive and negative aspects to having technological devices available for students to use in school. The availability of technology for students to use continues to rise. According to a 2018 report from Cambridge International, which is based on an online survey of nearly 20,000 teachers and students (ages 12–19) from 100 countries, found that use of technology in schools worldwide continues to grow, with 48% of students reporting they use a desktop computer in the classroom. Forty-two percent use smartphones, 33% use interactive whiteboards, and 20% use tablets (Cambridge International, 2018).

In 2019, a nationally representative group of more than 1,200 K-12 teachers was surveyed by Common Sense Media to measure the status of education technology in classrooms in America (Vega & Robb, 2019). Some key findings from this study include:

- Eighty percent of teachers have computing devices in their classrooms.
- Forty percent have 1-to-1 devices.
- Another 30% have devices for use by five or fewer students apiece.
- Sixteen percent reported being in a bring-your-own-device classroom. That percentage was higher in schools in affluent areas (20%) than non-affluent ones (13%).
- A small but significant percentage of teachers, 12%, said the majority of their students did not have access to the internet or a computer at home.

With the benefits of using technology in the classroom, the availability of these devices can be critical to motivating students to learn and engaging them in instructional activities. With some schools having limited access to technology and a large percentage of students possessing cell phones, the use of cell phones in instruction may be a solution to the lack of technological devices in schools.

Cell Phones in School

Given the positive and negative effects of technology, including cell phones, on students' academic performance and behavior, there has been a debate about whether to allow cell phones to be used in schools. Various schools and school districts have a myriad of policies and procedures on how to manage the use of cell phones. However, inconsistencies in practice and enforcement of these policies in the views of school administrators on these devices still exist.

To limit the negative impact of cell phones in schools, in 2018, France banned their use in schools. The legislation stipulates that children should not use their telephones within the school grounds (or outside the school for school-based activities such as sporting events or day trips) or link to the Internet through any computer. It is up to each school to decide how the ban, which applies to kids in preschool up to the age of 15, should be controlled. Individual schools can make their own rules about phone use in the older grades (Ledsom, 2019). Education Minister Jean-Michel Blanquer called banning cellphones in schools an issue of public health (Wamsley, 2017).

Research by Beland and Murphy (2015) in England supports this ban by France. To create a history of student performance in schools, they combined survey information

on mobile phone policies in schools in four cities in England with data on student achievement. Their findings showed a 6.41% increase in standard deviation in student achievement in schools that banned cell phone use (Beland & Murphy, 2015).

The debate about banning cell phones in schools has never been more evident than in New York City Schools. In 2006, Mayor Michael Bloomberg banned the use of cell phones in all New York City public schools. When Bloomberg's tenure as mayor ended, his successor, Bill de Blasio, ended this ban in 2015. The ban was enforced inconsistently and was unpopular with parents who were worried that they could not contact their children during school hours and just before and after school (Taylor, 2015).

Some school districts are reviewing their policy and procedures on managing and banning cell phone use in schools similar to New York City schools relative to parental concerns, but also for educational reasons. Liz Kolb, an assistant professor at the School of Education at the University of Michigan, said that in 2015, nearly 70% of schools that had cell phone bans in place five years ago reversed their policies. Part of the reasoning is because there are so many students with cell phones. The other reasons are that teachers and administrators have begun to see them as a learning tool, not just an entertainment toy, and they are starting to see that cell phones can be a cost-effective way to introduce technology to students (Kiema, 2015). Advocates for cell phone in schools such as Alan November stated in 2007 that:

> These tools can be a major distraction from learning, or they can be a major catalyst to it. It will be the courageous educator who works with students to

explore the power of these tools and in turn, empowers students to be lifelong learners and active shapers of a world we cannot yet imagine. (November, 2007).

Summary

Now more than ever, children and adolescents own cell phones and are using them for entertainment, communication, social interaction, and retrieving information. The availability of these cell phones can be a cost-effective solution for students who do not have access to technological devices and the Internet and their numerous benefits. As detailed, the use of technology in schools can increase student motivation to learn and engage students in the learning process. But cell phones can also be a distraction to this process as well as lead to social and emotional problems for students. Principals in schools have a great influence on how technology and cell phones are used in schools. Their leadership with their staff and their learning culture make a difference in how their students use technology and cell phones. The principal's perspective on the benefits and detriments of cell phones in schools affects how they enforce school district's policies on these devices and how their staff views the use of these devices by students.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this study was to measure, through a survey, Ohio high school and middle school principals' (grades 6-12) perceptions of student cell phone use within their schools and its effects on student academics and behavior. The research sought to investigate if there is a relationship between these perceptions and the consequences administered for violations of the student cell phone use policies and the age and experience of the principals and typology of the school that they lead. A study of cell phone use in schools in 2007 concluded that a majority of high schools have rules in place related to cell phone use by students. The study also concluded that parents usually accepted the cell phone usage policy of the school and that punitive measures varied from a slight reprimand to confiscation of the cell phone for improper cell phone use by students (Obringer & Coffey, 2007). Perceptions of principals regarding cell phone use by students and its effect on student learning were examined. This study aimed to replicate portions of the 2007 Obringer and Coffey study. The study also expounded on Holler's dissertation research in 2019 on the perceptions of high school principals in Minnesota on cell phone use within their schools (Holler, 2019). Unlike Obringer's and Coffey's and Holler's analysis, this research focused on high school and middle school principals, grades 6-12, in the state of Ohio. This research also considers the age and experience of the school principals and the typology of the schools.

Research Questions

The following research questions were addressed in the study:

1. What is the percentage of schools with written policies for cell phone use within the schools for students?
2. What percentage of schools administer progressive discipline for violations of their policy on student cell phone use?
3. As perceived by middle and high school principals in Ohio, what are the relationship between student cell phone use on academic performance, violations to the student code of conduct, and the number of consequences administered to students?
4. What is the relationship between age, gender, experience, and the principal's beliefs on student cell phone use?
5. What is the relationship between a school's typology and a principal's beliefs about student cell phone use?

Research Hypothesis

The researcher believed that the principal's age, gender, years of experience, and school typology affect the principal's views on student cell phone use in schools relative to academic performance and student behavior. The researcher also believed that there is a relationship between the age, gender, and years of experience of the principal and the typology of the school, and the frequency of the type of consequences administered to students who violate the student cell phone use policies.

The null hypotheses are:

Research question 1.

Ho: No high school or middle schools in Ohio have written policies on student cell phone use in schools.

Ha: All high school or middle schools in Ohio have written policies on student cell phone use in schools.

Research question 2.

Ho: No high school or middle schools in Ohio administer progressive discipline for violating the policy on student cell phone use in schools.

Ha: All high schools and middle schools in Ohio administer progressive discipline for violating the policy on student cell phone use in schools.

Research Question 3

Ho: No high school or middle school principals believe that there is a relationship between student cell phone use on academic performance, violations to the student code of conduct, and the number of consequences administered to students.

Ha: All high school or middle school principals believe that there is a relationship between student cell phone use on academic performance, violations to the student code of conduct, and the number of consequences administered to students.

Research question 4.

Ho: The age, gender, and years of experience of the principal have no relationship to the principal's beliefs on the effects of student cell phone use on student academic performance and behavior.

Ha: The age, gender, and years of experience of the principal have a relationship with the principal's beliefs on the effects of student cell phone use on student academic performance and behavior.

Ha: The typology of the school has no relationship to the frequency of the type of consequences administered to students who violate the policy on student cell phone use in school.

Ho: The typology of the school has a relationship with the frequency of the type of consequences administered to students who violate the policy on student cell phone use in school.

Research Design

The analysis was carried out using a quantitative approach. Quantitative research is used to measure habits, beliefs, emotions, and other factors to draw broad generalizations based on a broader community. In quantitative analysis, quantifiable evidence is used to express information and expose trends. The findings of this form of study are derived using methodological and mathematical methods (Formplus, 2021).

Specifically, this study used a descriptive quantitative analysis. In this type of research, the *what* of the subject is more essential than the *why*. It attempted to characterize the current state of a variable or phenomenon. The descriptive quantitative analysis can identify respondent attributes, arrange comparisons, monitor data patterns,

and confirm current conditions. Data is gathered, and the researcher does not start with a hypothesis; instead, they develop one after the information is collected (Formplus, 2021).

Principals' beliefs on student cell phone use and its effects on student academic performance and behavior were analyzed relative to the principal's age, gender, and experience and the typology of their schools. The frequency of the type of consequences administered to students for violations to the student cell phone use policy was analyzed relative to the characteristics of the principal and the typology of the schools that they lead. The survey instrument was adapted from Obringer and Coffey's initial version (2007).

Survey Instrument

A survey instrument was utilized in this research study and administered using the online platform Survey Monkey. The researcher created a survey by replicating and changing selected items in the questionnaire, *Cell Phones in American High Schools: A National Survey,* developed by Drs. John Obringer and Kent Coffey in 2007. Obringer and Coffey's methodology portion outlines the process used to produce the initial Obringer-Coffey survey. It discusses reliability and relevance through a pilot study conducted with a panel of high school principals. The survey was finalized with 19 items, divided into three types of responses: yes/no, agree/disagree, and short answer.

Survey research is defined as "the gathering of data from a group of people by their answers to questions" (Check & Schutt, 2012, p. 160). This form of study allows for a range of recruiting participants, collecting data, and using different instrumentation

techniques. Quantitative analysis techniques (e.g., utilizing questionnaires of numerically scored items) may be used in survey research. Surveys are widely used in social and psychological studies since they are frequently used to explain and explore human behavior (Singleton & Straits, 2009).

Target Population

The study participants were active principals and assistant principals in high schools and middle schools in Ohio, who are members of the Ohio Association of Secondary School Administrators (OASSA). All principals who met the requirements were invited to participate in the research. The principals were employed in high schools with students in grades 6-12. As research participants, high school and middle principals were chosen because they are usually responsible for implementing and enforcing the school's cell phone policies and procedures.

Instrumentation

An online survey method called Survey Monkey was used in the analysis. The survey was generated by replicating and changing select items from Dr. John Obringer and Dr. Kent Coffey's instrument for the study *Cell Phone in American High Schools: A National Survey* (2007). Dr. Coffey granted permission to use and reproduce the survey method created for their sample in February of 2021.

The following excerpt from Obringer and Coffey's methodology portion of the report explains how the initial Obringer-Coffey survey products were developed and how reliability and relevance were addressed via a pilot study and review by a panel of experts.

> A panel of experts (building principals) was assembled to review the draft survey. The panel consisted of 11 principals selected to represent rural and suburban settings and 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. (Obringer & Coffey, 2007, p. 41)

Obringer and Coffey's survey was sent to high school administrators in 50 States. Schools and administrators were chosen at random from a database that identified every high school in the United States, along with its current address, organized by state. Four high schools from each state were selected at random using a random number generator, and a survey was mailed to each school's principal. Schools that did not respond to the first survey were sent a follow-up survey. The original survey is in the appendix.

With permission, the researcher in this study revised the survey developed by Obringer and Coffey in 2007 (Appendix A). The editing of the survey questions is to place more of an emphasis on student cell phone use within schools as well as expand on the dissertation research of Holler (2019) by considering the age of the school principals as well as the demographic and socioeconomic makeup of the student population of the schools which they lead.

The researcher omitted questions 2, 5, 6 through 11, 14, 17, and 18 from Obringer and Coffey's original survey questions because those questions focused on school staff cell phone use. Questions 3, 4, 15, 16, and 19 of Orbringer's and Coffey's survey questions were modified into more specific questions regarding student cell phone use and the consequences for violations of student cell phone use in schools. The questions were modified to narrow the focus of the survey questions to better align with the research questions of the study.

Questions 12 and 13 from Obringer and Coffey's study were omitted because they reflected parents' views on cell phones and school safety.

Previous Usage of the Instrument by Other Researchers

Holler, in his dissertation research in 2019, utilized Obringer and Coffey's survey. His study aimed to find out how Minnesota high school principals felt about their school districts' cell phone policies and what they thought about the effects of teacher and student cell phone usage in the classroom on student learning. The report's findings would be used to support school principals and other policymakers in developing strategies that regulate mobile phone use in classrooms (Holler, 2019).

The research that was conducted is similar to Holler's, but it differs in the amended and omitted questions from the Obringer and Coffey survey questions. Holler's research focused on grades 9-12, and this research will also include grades 6-8. Finally, as noted by Holler in his suggestions for future research, this research collected demographic and socioeconomic data of the principals' schools to measure if these conditions were factors in response to the survey.

Validity and Reliability

Relative to the reliability of the survey research by Obringer and Coffey that the research adapted, they concluded that:

> The statistic used for this study was a chi-square with a .01 level of significance. For questions 1-8, the chi-square tested goodness of fit using the yes/no responses. For questions, 9-15, two items (strongly agree/agree) were grouped, and the other two items (strongly disagree/disagree) were grouped. In this case, the chi-square test goodness of fit using the agree/disagree responses. For questions 16-19, the open-ended responses were tallied to determine any common themes or patterns. (Obringer & Coffey, 2007, p. 42)

Data Collection Procedure

A link to the survey was distributed by email to all OASSA members who are active high school and middle school principals (Grades 6-12) (Appendices B, C, D). Two weeks after the initial email, a confirmation email was sent to prospective qualified survey participants to collect different responses. Finally, a third reminder email was sent two weeks later as a last attempt to gain more respondents.

The study's informed consent, which describes the research and outlines confidentiality procedures, was included in the email with the survey link. The study was also described in the email to potential survey participants and a request for participation.

Data Analysis Methods

Relative to which Ohio middle and high schools have a written policy on student cell phone use and administer progressive discipline for violating these policies, this data

was analyzed using descriptive statistics. Descriptive statistics is the name given to a type of data analysis that helps explain, demonstrate, or summarize data in a meaningful way so that patterns can emerge. On the other hand, descriptive statistics do not allow conclusions to be drawn beyond the data examined or to reach conclusions about any proposed theories. They are just a way of describing statistics. Descriptive statistics are important because it would be difficult to visualize what the data were showing if it were presented as raw data, particularly if there was a lot of it (Laerd Statistics, 2020).

The analysis for the relationship between the principals' age, gender, and years of experience, and typology of the principals' schools on their beliefs on student cell phone use and its negative impact on academic performance, violations to the student code of conduct, and the number of consequences administered was conducted by using a correlation coefficient formula. The correlation coefficient is a statistical measure of the strength of the relationship between the relative movements of two variables. The values range between -1.0 and 1.0. A calculated number greater than 1.0 or less than -1.0 means an error in the correlation measurement. A correlation of -1.0 shows a perfect negative correlation, while a correlation of 1.0 shows a perfect positive correlation. A correlation of 0.0 shows no linear relationship between the movements of the two variables (Investopedia, 2021).

Limitations

Since participation in the research was voluntary, the number of participants was restricted. Respondents were also be asked to click on a link sent to their email address, which presumably reduced the number of people who will take part in the survey. The

research was confined to school principals who work in buildings with students in grades 6-12. The school principals were also members of the Ohio Association of Secondary School Administrators.

Summary

The goal of the study was to find out how Ohio high school and middle school principals perceive their school districts' cell phone policies and the impact of teacher and student cell phone use on student learning. The research repeats parts of the Obringer and Coffey (2007) study and expands on Holler's dissertation work (2019). The researcher circulated electronic surveys to all participating Ohio high school and middle school principals and assistant principals who were members of the Ohio Association of Secondary School Administrators. To see if there have been any changes in the data, the researcher compared the survey findings to those of the Obringer and Coffey survey (2007) and Holler (2019). The socioeconomic and demographic characteristics of the principals' schools were also considered in the study. The study's findings may be applied to improve cell phone policies and procedures in high schools and middle schools.

CHAPTER IV

RESULTS

The study sought to examine Ohio high school and middle school (grades 6-12) principals' perceptions of student cell phone use within their schools and its effects on student academics and behavior. Also investigated was the link between these views and the sanctions applied for infractions of school cell phone regulations and the relationship between the principals' age, years of experience, and school type in which they are placed in charge. Data were collected utilizing a survey sent out by email to principals and assistant principals who were members of the Ohio Association of Secondary School Administrators and who worked in school buildings that students in grades 6 through 12 attended.

Participants

The survey was sent to 1,978 principals and assistant principals who are members of the Ohio Association of Secondary School Administration. The researcher disseminated the survey to principals in Ohio between June 2021 to July 2021. A letter (Appendix B) 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 July 2021. From the initial email request, 159 principals responded. The second request resulted in 42 responses, and finally, a third attempt was made, which generated nine responses for a total of 212 responses.

The frequency and percentages of the participants' demographics and school typology appear in Table 1 (see Appendix B for the corresponding bar graphs). The results in Table 1 show that 42% (*n* = 89) of respondents were between the ages of 35-44, and 36.8% (*n* = 78) were between the ages of 45-54. Only 1.4% (*n* = 3) of the respondents were 65 years and older. Regarding the gender of the respondents, 71.7% (*n* = 152) male, 27.8% (*n* = 59) female, and .5% (*n* = 1) self-identified as other. The majority of respondents had more than three years of school administration experience, with 38.7% (n = 82) having more than 12 years of experience.

Table 1

Frequency and Percentages of the Participants' Demographics and School Typology Classification

Variable	*n*	%
Age		
25-34	8	3.8
35-44	89	42.0
45-54	78	36.8
55-64	34	16.0
65+	3	1.4
Total	212	100.0
Gender		
Male	152	71.7
Female	59	27.8
Other	1	.5
Total	212	100.0
Years as a School Administrator		
0-3 years	15	7.1
3-6 years	34	16.0
6-9 years	45	21.2
9-12 years	36	17.0
Over 12 years	82	38.7
Total	212	100.0
School District's Typology		

Rural - High Student Poverty & Small Student Population	45	21.3
Rural - Average Student Poverty & Very Small Student Population	41	19.4
Small Town - Low Student Poverty & Small Student Population	29	13.7
Small Town - High Student Poverty & Average Student Population Size	30	14.2
Suburban - Low Student Poverty & Average Student Population Size	34	16.1
Suburban - Very Low Student Poverty & Large Student Population	7	3.3
Urban - High Student Poverty & Average Student Population	21	10.0
Urban - Very High Student Poverty & Very Large Student Population	4	1.9
Total	211	100.0

In the 2020-21 school year, there was a total of 4,759 school principals in Ohio; 2,550 of the principals were male, and 2,209 were female. Nationally men make up 67.3% of high school principals and 60% of middle school principals (Ramaswamy, 2020) The high percentage of males as principals in middle and high schools may have resulted in the lower number of females responding to the survey.. The average years of experience of a principal in Ohio are 8.31 years. The average age of a principal is 46.8 years (Ohio Department of Education, n.d.). There are only eight school districts categorized in Ohio as Urban-Very High Student Poverty and Very Large Student Population. This may have resulted in the low response rate from the principals in those schools. The 212 principals that responded to the survey represented a margin of error of 6% with a confidence level of 95%. The margin of error informs you how closely your survey findings represent the population's opinions. The confidence level is the probability that your sample accurately reflects the attitudes of the sampled population. Typically, the standard confidence level is 95% (Survey Monkey, n.d.). Survey findings are reported and analyzed below, organized by research questions.

Research Questions

1. What is the percentage of schools with written policies for cell phone use for students?
2. What types of cell phone use policies are reported by principals?
3. What percentage of schools administer progressive discipline for violations of student cell phone use policies?
4. Is progressive discipline specifically for cell phone use or misconduct facilitated with a cell phone?
5. As perceived by principals in Ohio with students in grades six through twelve, what are the relationships between student cell phone use on academic performance and violations to the student code of conduct?
6. What is the relationship between age, gender, experience, and the principal's beliefs on student cell phone use?
7. What is the relationship between a school's typology and a principal's beliefs about student cell phone use?

Research Question 1

Research Question 1 was *What is the percentage of schools with written policies for cell phone use within the schools for students and the types of policies?* The frequency and percentages of the participants' demographics and school typology appear in Table 2 (see Appendix B for the corresponding bar graphs). Approximately 98.6% (n = 209) of the respondents stated that they had written policies on student cell phone use within their schools. Of the respondents to this question, only three (1.4%) reported that

they had no written policies regarding cell phone use in their schools. The majority of schools have written policies on student use of cell phones within their schools.

Table 2

Frequency and Percentages for Written Policies for Cell Phone Use within the School for Students

Variable	*n*	%
Does your school/district have written policies and procedures regarding the following?		
Has policies	209	98.6
Has no written policies	3	1.4
Total	212	100.0

Research Question 2

Research Question 2 was *What types of cell phone use policies are reported by principals?* The frequency and percentages for specific written policies regarding student cell phone usage can be found in Table 3 (see Appendix B for the corresponding bar graphs). The majority (89.2%, $n = 189$) reported having written policies and procedures regarding student cell phone use in school. Similarly, 71.1% ($n = 150$) reported having written policies and procedures regarding students bringing their own technological devices to school. Fewer respondents (59.7%, $n = 126$) reported having written policies and procedures regarding other personal communication devices. Finally, only 2.4% ($n = 5$) reported having other written policies for cell phone use within the schools for students and the types of policies. In addition, five respondents stated in the comment section of the question that they had individual school building policies, internet, and device usage, specific usage agreements for technology, and policies relative to the devices they supplied to their students. A high percentage of the school districts not only have policies

regulating student cell phone use; they also have policies regulating the use of all technological devices such as tablets and personal laptop computers.

Table 3

Frequency and Percentages for Various Written Policies for Cell Phone Use within the School for Students

Variable	*n*	%
School/district has written policies and procedures regarding the following.		
Has policies	209	98.6
Has no written policies	3	1.4
Total	212	100.0
School/district has written policies and procedures regarding student cell phone use in school.		
No	23	10.8
Yes	189	89.2
Total	212	100.0
School/district has written policies and procedures regarding students bringing their own technological devices to school.		
No	61	28.9
Yes	150	71.1
Total	211	100.0
School/district has written policies and procedures regarding other personal communication devices.		
No	85	40.3
Yes	126	59.7
Total	211	100.0
School/district has other written policies for cell phone use within the schools for students and the types of policies		
No	207	97.6
Yes	5	2.4
Total	212	100.0

Research Question 3

Research Question 3 was *What number of principals administer progressive discipline for violations of their policy on student cell phone use*? As seen in Table 4,

71.6% (*n* = 151) indicated administering progressive discipline of consequences for having a cell phone in their schools, while 28.4% (*n* = 60) did not (see Appendix C for the corresponding bar graph). Progressive discipline refers to the consequences for a violation of the student code conduct increasingly getting more severe. The differences in these results may be due to the fact that possession of a cell phone may not be considered a major offense to violating the student code of conduct.

Table 4

Frequency and Percentages for Principals Administering Progressive Discipline for Students Possessing a Cell Phone in School

Variable	*n*	%
Do you administer progressive discipline consequences for a student possessing a cell phone in school?		
Yes	151	71.6
No	60	28.4
Total	211	100.0

Research Question 4

Research Question 4 was *What is progressive discipline specifically for cell phone use or misconduct facilitated with a cell phone?* The frequency and percentages for the survey responses used to address this research question appear in Table 5 (see Appendix C for the corresponding bar graph). Relative to administering progressive discipline, consequences for cell phone use in their schools, and other violations to the student code of conduct that were facilitated by the use of cell phones in their schools, the responses varied. Approximately 63.5% (*n* = 134) of the respondents administered progressive discipline consequences for using a cell phone in school. School administrators issued increasingly worse consequences for using a cell phone to violate other rules within their

schools. Eighty-four percent (n = 178) of the respondents issued progressive discipline consequences for cyberbullying with a cell phone. Similarly, 82.5% (n = 175) of the principals issued progressive consequences for academic dishonesty or cheating, and 85.8% (n = 182) issued progressive consequences for other violations of the student code of conduct facilitated by the use of cell phones within their schools. The principals that were surveyed may view the violations to the student code of conduct caused by the cell phones as more severe than just using a cell phone in school.

Table 5

Frequency and Percentages for Administering Progressive Discipline for Violations of Their Policy on Student Cell Phone Use

Variable	*n*	%
Do you administer progressive disciple consequences for using a cell phone at school?		
No	77	36.5
Yes	134	63.5
Total	211	100.0
Do you administer progressive disciple consequences for cyberbullying with a cell phone?		
No	34	16.0
Yes	178	84.0
Total	212	100.0
Do you administer progressive disciple consequences for using a cell phone involved in academic dishonesty (cheating)?		
No	37	17.5
Yes	175	82.5
Total	212	100.0
Do you administer progressive disciple consequences for using a cell phone that results in other violations of the student code of conduct?		
No	30	14.2
Yes	182	85.8
Total	212	100.0

Research Question 5

Research Question 5 was as perceived by middle and high school principals in Ohio, *What are the relationship between student cell phone use on academic performance, violations to the student code of conduct, and the number of consequences administered to students*? The frequency and percentages for the survey responses used to address this research question appear in Table 6 (see Appendix D for the corresponding bar graph). Of the respondents, 28.8% (n = 61) believe that cell phones have 0 to 10% of a negative impact on the academic performance of their students; 35.8% (n = 76) thought the percentage is between 10 and 20%. Approximately 19% (n = 41) believed cell phones' adverse effects on academic performance are somewhere between 30% to 40% and 9.9% (n = 21) believed the negative impact is somewhere between 50% and 60%. Approximately 6.2% (n = 13) thought the percentage to be higher than 60%.

When it comes to the perception of what percentage of violations to the student code of conduct can be attributed to cell phone use within their schools, the results varied. As seen in Table 6, 35.1% (n = 74) believed that cell phones caused between 0 to 10% of their student code of conduct violations. Thirty-seven percent (n = 78) thought that the percentage was between 10 and 20% and 14.2% (n = 30) believed cell phones caused between 30 and 40% of the violations. A little over 6% (n = 13) believed the portions were somewhere between 50 and 60%. Approximately 7.6% (n = 16) thought the percentage to be higher than 60%.

Table 6

Frequency and Percentages for Relationship between Student Cell Phone Use on Academic Performance, Violations to the Student Code of Conduct, and the Number of Consequences Administered to Students

Variable	*n*	%
What do you perceive to be the percentage of the negative impact on academic performance that can be attributed to the use of cell phones within your school by students?		
Between 0-10%	61	28.8
Between 10-20%	76	35.8
Between 30-40%	41	19.3
Between 50-60%	21	9.9
Between 60-70%	5	2.4
Between 70-80%	5	2.4
Between 80-90%	3	1.4
Total	212	100.0
What do you perceive to be the percentage of violations to their student code of conduct that can be attributed to the use of cell phones by students within your school?		
Between 0-10%	74	35.1
Between 10-20%	78	37.0
Between 30-40%	30	14.2
Between 50-60%	13	6.2
Between 60-70%	9	4.3
Between 70-80%	4	1.9
Between 80-90%	2	.9
Between 90-100%	1	.5
Total	211	100.0

The researcher also used a Pearson correlation to assess the relationship between student cell phone use on academic performance and violations to the student code of conduct; for this purpose responses from the Ohio principals have been collected. Table 7 includes the correlation matrix to assess the associations between the variables. The results show that there was a strong and positive correlation between negative impact on student academic performance and violations to their student code of conduct that can be

attributed to the use of cell phones by students within your school ($r = .60$, $p < .01$). The proposed relationship is also reflected in the scatter plot shown in Figure 1.

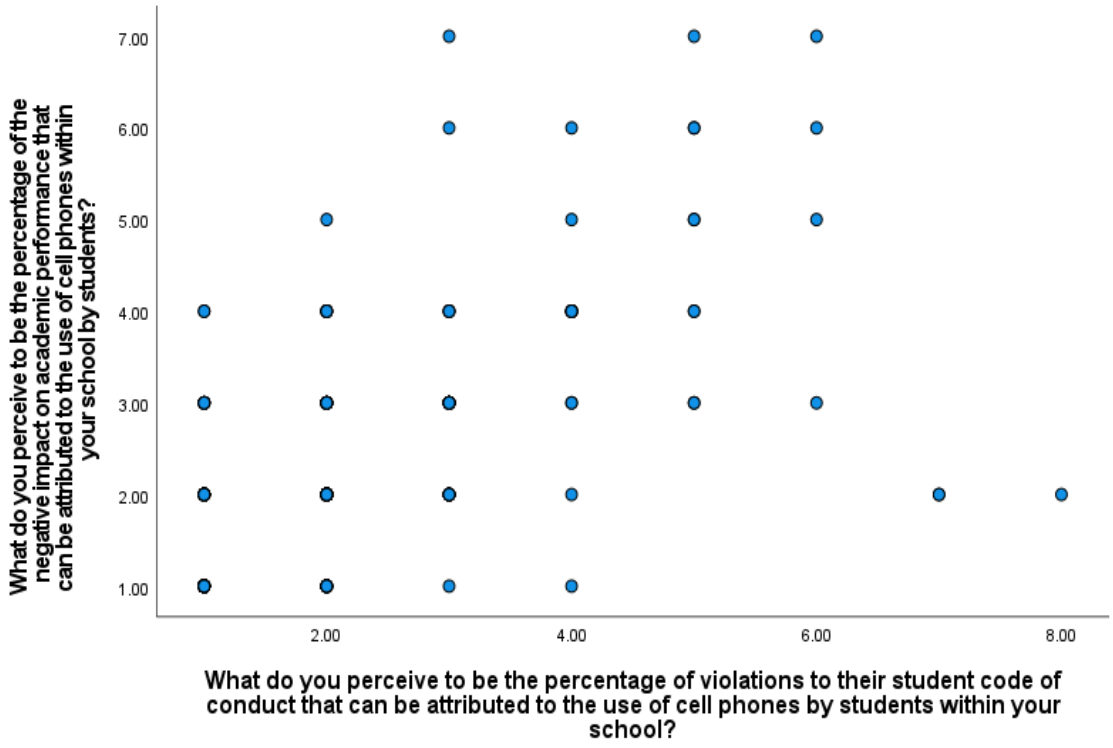
Table 7

Pearson Correlation

Variables in the Correlation Matrix	*r*	*p*
What do you perceive to be the percentage of the negative impact on academic performance that can be attributed to the use of cell phones within your school by students & What do you perceive to be the percentage of violations to their student code of conduct that can be attributed to the use of cell phones by students within your school?	.60	.001

Figure 1

Scatterplot of the Relationship Between Student Cell Phone Use on Academic Performance and Violations to the Student Code of Conduct



Research Question 6

Research Question 6 was *What is the relationship between age, gender, experience, and the principal's beliefs on student cell phone use?* The researcher used multiple linear regression to assess the impact of age, gender, and experience on the principals' belief on student cell phone usage and violation of code of conduct separately, with age, gender, and experience as independent variables (predictors) and the principals' perception as the dependent variables.

Regression Model for Perceptions of the Percentage of the Negative Impact on Student Academic Performance That Can be Attributed to the Use of Cell Phones Within Schools by Students

The assumption for multicollinearity between the independent variables was tested using Tolerance and Variance Inflation Factor ([VIF] Triola, 2014). As seen in Table 8, the tolerance values were each greater than 0.1 and the VIF values were less than 10. As such, multicollinearity was not an issue in the model. The model as a whole was not statistically significant ($F(3,208) = 2.54$, $p = .57$) and the model only accounted for 3.6% of the variance in principal perceptions of the percentage of the negative impact on student academic performance ($R^2 = 0.036$). The results imply that the model is not a good fit. Given the lack of a statistically significant regression model, the values in the regression table are not interpreted and the researcher can accept the null hypothesis that there is no relationship between age, gender, and experience and principals' perceptions of the percentage of the negative impact on student academic performance.

Table 8

Multiple Linear Regression for Principals' Perceptions of the Percentage of the Negative Impact on Student Academic Performance That Can Be Attributed to the Use of Cell Phones Within Schools by Students

Model		Unstandardized Coefficients		Standardized Coefficients	*t*	*p*	Collinearity Statistics	
		B	*SE*	*β*			Tolerance	VIF
	Age	-0.01	0.12	-0.009	-0.12	0.90	0.80	1.24
	Gender	0.44	0.20	-0.15	-2.19	0.02	0.98	1.01
	Years in School Administration	-0.09	0.07	-0.09	-1.24	0.21	0.79	1.25

Regression Model for Principal's Perceptions of the Percentage of Violations to Their Student Code of Conduct That Can Be Attributed to the Use of Cell Phones by Students

The assumption for multicollinearity between the independent variables was tested using Tolerance and VIF values. As seen in Table 9, the tolerance values were each greater than 0.1 and the VIF values were less than 10. As such, multicollinearity was not an issue in the model. The model as a whole was not statistically significant ($F(3,206) = 1.39$, $p = .24$) and the model only accounted for 2% of the variance in principal perceptions of the percentage of violations to their student code of conduct that can be attributed to the use of cell phones by students ($R^2 = 0.02$). The results imply that the model is not a good fit. Given the lack of a statistically significant regression model, the values in the regression table are not interpreted and the researcher can accept the null hypothesis that there is no relationship between age, gender, and experience and principals' perceptions of the percentage of violations to their student code of conduct that can be attributed to the use of cell phones by students.

Table 9

Multiple Linear Regression for Principals' Perceptions of the Percentage of the Negative Impact on Student Academic Performance That Can Be Attributed to the Use of Cell Phones Within Schools by Students

Model		Unstandardized Coefficients		Standardized Coefficients	*t*	*p*	Collinearity Statistics	
		B	*SE*	*β*			Tolerance	VIF
	Age	-0.12	0.12	-0.07	-1.01	0.31	0.80	1.24
	Gender	-0.34	0.20	-0.11	-1.65	0.10	0.98	1.01
	Years in School Administration	-0.009	0.07	-0.009	-0.11	0.90	0.79	1.25

Research Question 7

Research Question 7 was *What is the relationship between a school's typology and a principal's beliefs about student cell phone use?* This research question was examined with a one-way analysis of variance (ANOVA).

Principals' Perceptions of The Percentage of The Negative Impact on Academic Performance That Can Be Attributed to Student Use of Cell Phones by School Typology

The first ANOVA was used to determine if there were statistically significant differences in principals' perceptions of the percentage of the negative impact on academic performance that can be attributed to student use of cell phones across school typologies. Levene's test was used to determine homogeneity of variance and the null hypothesis that the population variances are equal. A Levene's *p-value* that is less than .05 indicates homogeneity of variances has not been achieved. Levene's test of equality

of error variances for average agreement with needing services was not statistically significant ($F(7,203) = 0.70$, $p = .66$), indicating this assumption of normality was not violated. Table 10 shows the descriptive statistics for principals' perceptions of the percentage of the negative impact on academic performance that can be attributed to student use of cell phones by school typology. As seen in Table 11, there was no statistically significant difference in principals' perceptions of the percentage of the negative impact on academic performance that can be attributed to student use of cell phones by school typology, $F(7, 203) = 0.82$, $p = .56$. The mean score for each school typology is plotted in Figure 2.

Table 10

Descriptive Statistics Principals' Perceptions of the Percentage of the Negative Impact on Academic Performance That Can Be Attributed to Student Use of Cell Phones across School Typologies

School Typologies	*N*	*M*	*SD*	*SE*	95% *CI* for Mean		Min	Max
					Lower Bound	Upper Bound		
Rural - High Student Poverty & Small Student Population	45	2.35	1.44	0.215	1.92	2.79	1.00	7.00
Rural - Average Student Poverty & Very Small Student Population	41	2.17	1.24	0.194	1.77	2.56	1.00	6.00
Small Town - Low Student Poverty & Small Student Population	29	2.31	1.22	0.22	1.84	2.77	1.00	6.00
Small Town - High Student Poverty & Average Student Population Size	30	2.70	1.26	0.23	2.22	3.17	1.00	5.00
Suburban - Low Student Poverty & Average Student Population Size	34	2.35	1.43	0.24	1.85	2.8529	1.00	7.00

Suburban - Very Low Student Poverty & Large Student Population	7	2.28	1.38	0.52	1.00	3.5621	1.00	5.00
Urban - High Student Poverty & Average Student Population	21	2.28	1.14	0.25	1.76	2.8076	1.00	6.00
Urban - Very High Student Poverty & Very Large Student Population	4	1.25	0.50	0.25	0.45	2.04	1.00	2.00
Total	211	2.33	1.30	0.08	2.15	2.50	1.00	7.00

Table 11

ANOVA for Principals' Perceptions of the Percentage of the Negative Impact on Academic Performance That Can Be Attributed to Student Use of Cell Phones Across School Typologies

	Sum of Squares	*df*	Mean Square	*F*	*p*
Between Groups	9.92	7	1.41	0.82	0.56
Within Groups	348.85	203	1.71		
Total	358.77	210			

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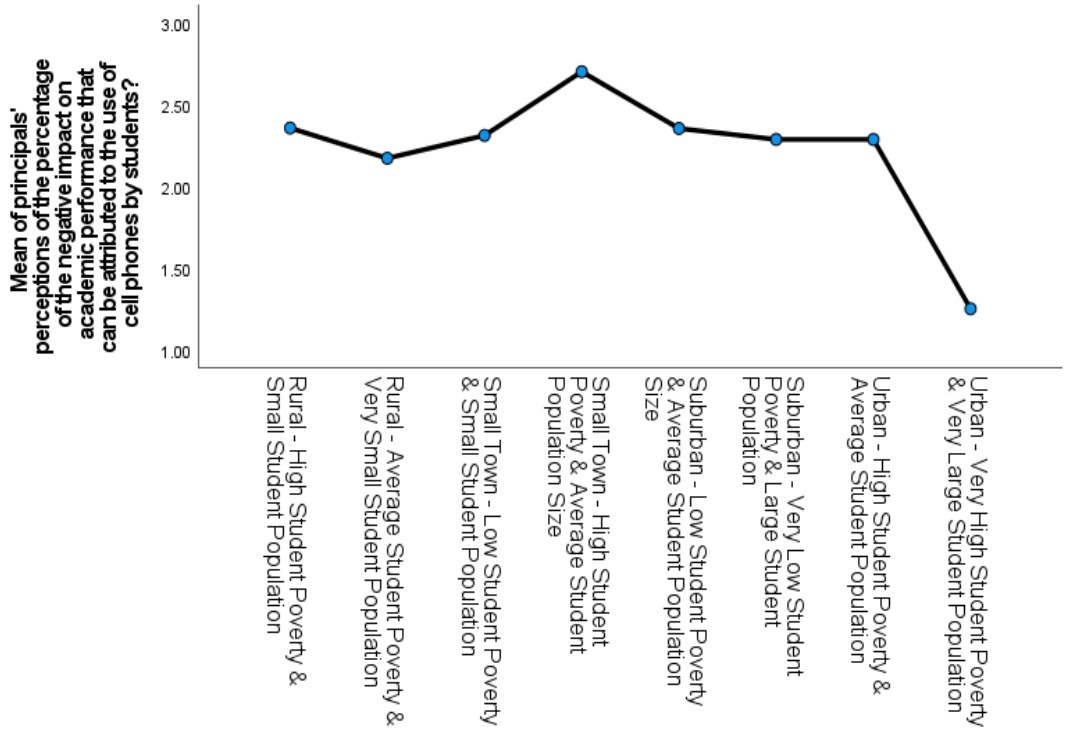
Figure 2

Plotted Means for the Average Negative Impact on Student Performance Attributed to Cell Phone Usage as Per the Principal's Perception across School Typologies



Principals' Perceptions of the Percentage of Violations to Their Student Code of Conduct That Can Be Attributed to the Use of Cell Phones by Students by School Typology

The second ANOVA was used to determine if there were statistically significant differences in principals' perceptions of the percentage of violations to their student code of conduct that can be attributed to the use of cell phones by students across school typologies. Levene's test of equality of error variances for average agreement with needing services was not statistically significant ($F(7,202) = 1.53$, $p = .15$), indicating this assumption of normality was not violated. Table 12 shows the descriptive statistics

for principals' perceptions of the percentage of violations to their student code of conduct that can be attributed to the use of cell phones by students across school typologies. As seen in Table 13, there was no statistically significant difference in principals' perceptions of the percentage of violations to their student code of conduct that can be attributed to the use of cell phones by students across school typologies, $F(7, 202) = 1.02$, $p = .41$. The mean score for each school typology is plotted in Figure 3.

Table 12

Descriptive Statistics for Principals' Perceptions of the Percentage of Violations to Their Student Code of Conduct That Can Be Attributed to the Use of Cell Phones by Students Across School Typologies

School Typologies	*N*	*M*	*SD*	*SE*	95% *CI* for Mean		Min	Max
					Lower	Upper		
Rural - High Student Poverty & Small Student Population	45	2.24	1.36	.20	1.83	2.65	1.00	6.00
Rural - Average Student Poverty & Very Small Student Population	41	1.90	1.06	.16	1.56	2.23	1.00	5.00
Small Town - Low Student Poverty & Small Student Population	29	2.27	1.68	.31	1.63	2.91	1.00	8.00
Small Town - High Student Poverty & Average Student Population Size	29	2.44	1.02	.18	2.06	2.83	1.00	5.00
Suburban - Low Student Poverty & Average Student Population Size	34	2.17	1.60	.27	1.61	2.73	1.00	7.00
Suburban - Very Low Student Poverty & Large Student Population	7	2.42	1.27	.48	1.25	3.60	1.00	5.00
Urban - High Student Poverty & Average Student Population	21	2.42	1.28	.28	1.84	3.01	1.00	6.00

Urban - Very High Student Poverty & Very Large Student Population	4	1.00	.00	.00	1.00	1.00	1.00	1.00
Total	210	2.20	1.34	.092	2.01	2.38	1.00	8.00

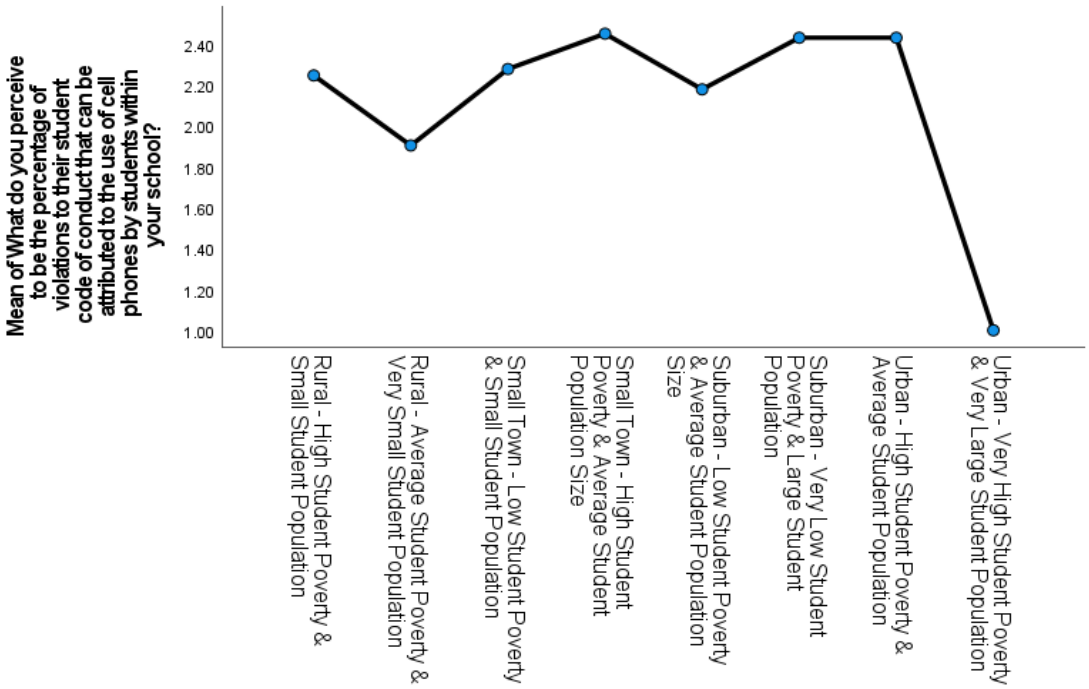
Table 13

ANOVA for Principals' Perceptions of the Percentage of Violations to Their Student Code of Conduct That Can Be Attributed to the Use of Cell Phones by Students Across School Typologies

	Sum of Squares	*df*	Mean Square	*F*	*p*
Between Groups	12.91	7	1.84	1.02	.41
Within Groups	364.68	202	1.80		
Total	377.60	209			

Figure 3

Plotted Means for the Average Percentage of Violations of Student Code of Conduct as Per the Principal's Perception Across Levels of Typologies



Exploratory Qualitative Analyses

The principals were asked this open-ended question regarding cell phones in their schools and their opinion on if cell phones can benefit student learning. The question was as follows: "With so many students possessing a cell phone, do you believe that it is possible to use these devices to enhance instruction and educational outcomes? If so, how?" The researcher used the Nvivo 12 Plus software to examine the responses to the open-ended question and to analyze the data at a latent level to understand the underlying patterns in the responses. The analytical unit was each line segment in the transcripts and the codes evolved during the analysis given this was an inductive thematic analysis. During the first coding procedure, all responses were thoroughly reviewed. Following the coding, categorization was used to find similar codes. The meanings and commonalities of the codes were then used to group the codes into main themes. The researcher used Braun and Clarke's (2006) method, which consisted of the following steps:

1. Read through the transcripts several times to get familiarization of data.
2. Coded the unit of analysis.
3. Categorized coded units.
4. From categories developed the main themes.
5. Results write-up.

As seen in Table 14, two themes emerged from the qualitative survey data: (a) student cell phone usage can be positive in educational settings and (b) student cell phone usage in educational settings can be negative. The specific codes associated with each category can be found in Appendix E.

Table 14

Categories and Themes With Frequencies

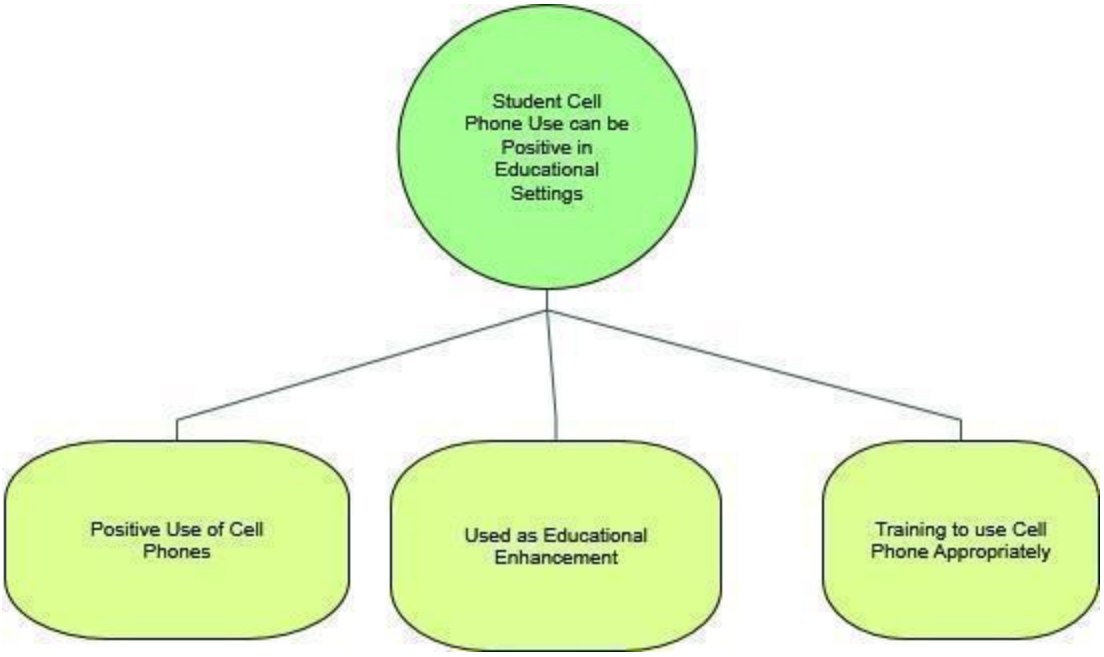
Categories	Frequencies	Emergent Themes
Positive use of cell phones	181	Theme 1: Student Cell Phone Usage Can Be Positive in Educational Settings
Training to use phone appropriately	16	Theme 1 Student Cell Phone Usage Can Be Positive in Educational Settings
Used as education enhancement	65	Theme 1: Student Cell Phone Usage Can Be Positive in Educational Settings
Bullying and privacy concerns	53	Theme 2: Student Cell Phone Usage in Educational Settings can be Negative
Learning-related issues	115	Theme 2: Student Cell Phone Usage in Educational Settings can be Negative

Theme 1: Student Cell Phone Usage Can Be Positive in Educational Settings

As seen in Figure 4, the three categories of the *positive use of cell phones*, *training to use phones appropriately*, and *used as education enhancement* emerged from the open-ended survey questions with regard to Theme 1- student cell phone usage can be positive in educational settings.

Figure 4

Theme 1 and Related Categories



Respondents shared positive opinions about the use of cell phones in educational settings. They considered cell phones as an educational aid that supports students in their academic work. The respondents indicated that cell phones are a reality of society and have significance in day-to-day life; banning such an essential part of life will not help practically. They also indicated that cell phones served as powerful tools in the 21st century, and when other devices are unavailable, cell phones serve an essential purpose to enhance educational outcomes.

Respondents also felt that students are more comfortable with how their cell phone functions and that cell phones often work faster than school-provided devices. However, they indicated cell phones should be used with caution and with the guidance

of a class teacher to prevent misuse. Respondent 41 shared that using phones was not an issue in their school and that teachers also use cell phones to search answers and queries:

> Many of our teachers use apps such as Kahoot to spice up class review material. Through the pandemic, they have also submitted with phones, as not everyone uses a laptop (but we have made them available). Teachers also allow phone use to look up that quick answer or to verify a particular point. Phones are not too much of an issue in our school.

In another example, Respondent 81 shared, "Rather than restrict the use of personal devices (which I feel is an unrealistic expectation) we need to teach students the expectations and norms of having/using technology in a social, educational, or professional environment."

The principals mentioned varied educational outcomes and believed cell phones could be integrated with the present devices to maximize the benefit. They also mentioned that students have access to online grades, applications, surveys, calculators, and assignments via cell phone and that students can also check their missing assignments, receive teacher feedback, communicate with teachers, record lectures, and retrieve information with cell phones. For example, Respondent 20 indicated, "[Students can] do research, access their electronic grade books for grade checks and missing assignments, gather/submit information (surveys, forms, etc.)." Respondent 72 shared, "[Students can receive] immediate feedback, formative assessment, research, recording lectures."

Although participants had a positive view of using cell phones and wanted to

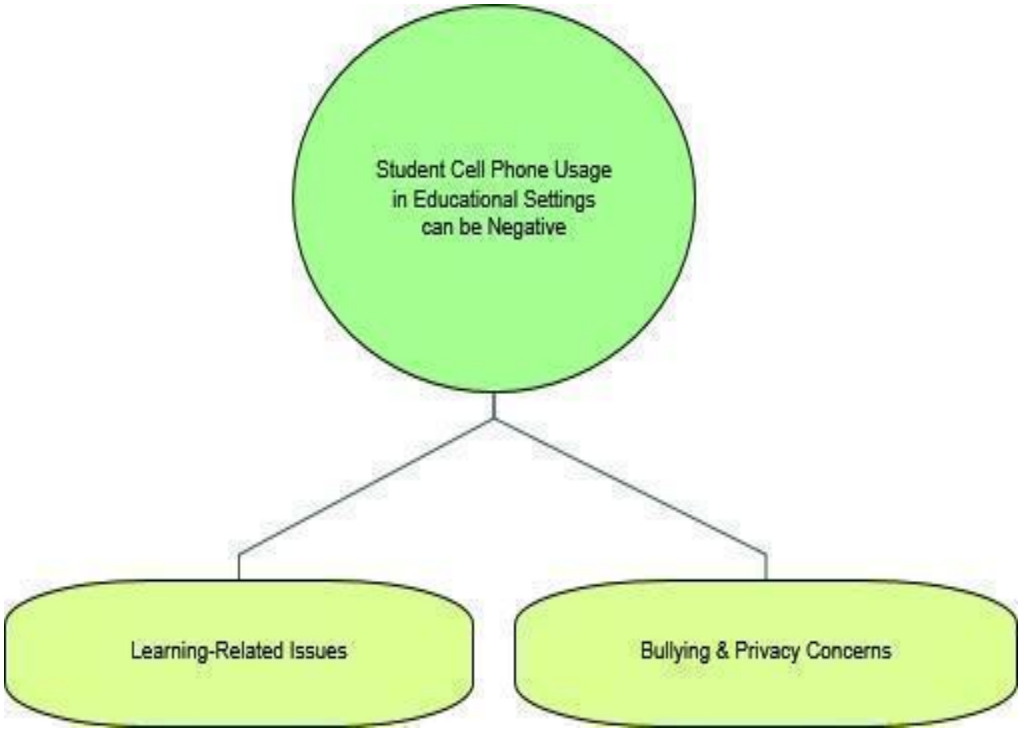
utilize careful monitoring in the educational system, they believed cell phones could be used appropriately or misused and felt that students needed the education to use cell phones appropriately. Additionally, respondents felt teachers needed additional training with regard to monitoring the use of cell phones. Respondents shared that teachers' use of classroom rules pertaining to cell phone usage would be beneficial and minimize the risk of students' inappropriate use of cell phones. Respondent 60 wrote, "If teachers are trained and the same rules apply in all classrooms." Similarly, Respondent 86 shared, "You must take steps to minimize the number of opportunities your students will have to be on social media and to have the ability to take videos while at school for this to be effective."

Theme 2: Cell Phone Usage in Educational Settings Can Be Negative

As seen in Figure 5, the two categories of *bullying and privacy concerns* and *learning-related issues* emerged in regard to Theme 2- *cell phone usage in educational settings can be negative*.

Figure 5

Theme 2 and Related Categories



Participants' responses reflected concerns about the use of cell phones in classrooms and some opposed using cell phones in educational settings. Their biggest concern was related to cyberbullying. Some respondents expressed that cell phones could cause bullying and other problems within and outside of the classroom because of social media. Additionally, they expressed that social media addiction would cause more harm than good for students and that students would be distracted during class. With a fear of missing important information, many felt that students with cell phones would constantly check their cell phones leading to distracted learning.

Moreover, respondents felt students constantly use cell phones during class to text each other and may use them for cheating during tests and exams. One participant shared

that cell phones lead students to behave irresponsibly because they know their actions are not monitored on cell phones. The sentiment was that students are more likely to use words or spread hateful things via a cell phone because of a lack of accountability of their actions, resulting in uncontrollable damage. Some respondents believed students should stick to the devices provided by schools and prohibit the use of cell phones in their classes. For example, Respondent 40 opined as follows:

> In my personal opinion, cell phones have created more problems with social and emotional distress, bullying, and 24/7/365 communication that does not stop when a student physically leaves a situation, but rather it follows them no matter where they are.

With regard to students being distracted by their cell phones, Respondent 50 indicated:

> The reason I say this is notifications. Students will subconsciously look at what is going on when they are on their phone and receive a notification and we live in a culture of students where there is a real fear of missing out.

Respondent 113 mentioned:

> Students at a younger age, depending on parent involvement in cell phone use, have a sense that their words and actions online are not monitored and they can say things that they wouldn't say in the classroom or directly to another student. This creates a harmful and hurtful environment for students and effectively an emotionally unsafe

> environment at school, especially if they engage in these activities during the school day.

Besides causing bullying and emotional concerns, few participants believed cell phones are unsuitable and could not contribute to educational learning. They believed desired educational outcomes could be achieved using school-approved technology, and cell phones can only cause hindrances or negativity. The schools with one-to-one teaching believed that cell phones could have a less positive impact and were not needed. Respondent 23 wrote, “With our school-going 1 to 1 I can think of the little positive impact of allowing the student to use cell phones during instructional time.” Additionally, some mentioned that cell phones do not have keyboards and functions that can integrate the complete functions of an educational application. Respondent 25 shared:

> I don't believe they can be used in an educational setting to enhance instruction or educational outcomes. They are too difficult to monitor, and with so many social media distractions it is impossible for students to ignore alerts, etc. Having school-issued computers makes it much easier for teachers to integrate technology into the curriculum and enhance learning opportunities and outcomes.

In a final example of this theme, Respondent 68 shared the experience of implementing a no cell phone policy and its positive impact in school. After the ban on cell phones, schools reported fewer bullying, harassment, and discipline issues. Moreover, integrating personal devices into students' lives makes it difficult to separate them for educational purposes. They would divert their attention from educational applications to other

applications (snap chat etc.) for texting. Respondent 68 explained, “Three years ago, we implemented a no cell phone policy (must be turned off during the school day) for our students grades 5-8. As a result, student discipline, bullying/harassment/intimidation/isolation reporting have gone down tremendously since the change.”

Overall, survey respondents believed that cell phone integration should be contingent upon the ability of teachers and staff to monitor and teach students to use cell phones ethically and appropriately. They acknowledged the positive impact cell phones could bring to education but were also aware of the concerns that may arise when students use cell phones in the educational setting. Respondents felt that having rules in place around student cell phone usage and training teachers to monitor students’ cell phone usage in school increases positive educational outcomes for students.

Summary

It appears by the respondents that a high percentage of their schools have policies regarding student cell phone use and other technological devices within their schools. Almost 72% of the principals that responded stated that they utilize progressive discipline for use of cell phones within their schools. The principals that participated in the survey reported over a 90% rate of administering progressive discipline for violations to the student code of conduct for offenses caused by a cell phone.

Almost 29% of the respondents felt that cell phones caused between 0% and 10% percent of a negative impact on academic performance and almost 36% believe cell phones are responsible for somewhere between 10% and 20% of a negative impact. 19%

percent of the respondents believed that cell phones were responsible for 30% to 40% of a negative impact on academic performance and less than 10% of the respondents felt that cell phones were responsible for more than a 50% negative impact on academic performance by their students.

When it comes to violations to the student code of conduct, 35% of the respondents believed that cell phones can be attributed to up to 10% of the conduct violations within their schools. Over 36% of the principals felt that cell phones contributed to up to 20% of their conduct violations, and 14% of them felt it was somewhere between 30% and 40%. Under 10% of the respondents felt that cell phones could be attributed to a larger percentage of their conduct violations than 40%.

When asked if cell phones can be used to enhance instruction and increase educational outcomes in an open-ended question, it appeared that most of the respondents felt yes they could be used for an educational benefit, if monitored properly and in a structured situation. Some principals felt that cell phones were not needed in their schools for technology because their school system supplied a device for students to use. It also appears that some principals of younger students thought that cell phones and their uses in schools cause too much of a distraction.

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CHAPTER V

DISCUSSION OF FINDINGS

Introduction

As student ownership rates and technological device capability increase, cell phone usage in schools will continue to be a source of contention among all stakeholders. Even though there is a range of potential positive applications for cell phone usage in the classroom (Cirelli, n.d.), the bulk of the research on the subject focuses on the harmful elements of student cell phone use (Amidtaher et al., 2016; Gerosa et al., 2021; Lepp et al., 2014; Sohn et al., 2019). Furthermore, most research involves college students in metropolitan areas and is primarily performed via survey data or observation (Sunday et al., 2021). The current research on cell phone use and its effect on younger children in school and that of the perceptions of the leaders of these schools is limited. Expanding on previous research, this study, through a survey, examined the perceptions of principals of students in grades 6 through 12 in Ohio and their beliefs on the effects of cell phones within their schools.

Holler's research attempted to determine Minnesota high school (Grades 9-12) principals' perceptions of the effectiveness of their school districts' cell phone policies and their perceptions of teacher and student cell phone use in the classroom on student learning. Unlike Holler's (2019) research, this research included middle school principals and the principals' age, experience, and demographics of the school in which they work, as well as their opinions on student cell phone usage and the repercussions they impose for violations of their policy on this use.

This study ascertained principals' perceptions of student cell phone usage and its influence on student learning. It duplicated elements of the Obringers and Coffey 2007 investigation and built on Holler's dissertation research from 2019 on high school administrators' opinions of cell phone usage in their classrooms. Unlike Obringer's, Coffey's, and Holler's analyses, this study concentrated on principals in Ohio who work with children in grades 6 through 12. Additionally, it analyzed the school administrators' age, gender, and years of experience and the school's typology.

Findings

Policies

The principals in the study were asked if their schools had written policies regarding student cell phones and other technological devices used within their schools. Almost all school districts where the principals worked had written guidelines concerning student cell phone use. This finding is consistent with Coffey and Obringer's study in 2007 and Holler's study 2019 with high school principals in Minnesota. In addition, over 70% of the principals who responded to the survey reported that they had policies regulating bringing other technological devices such as personal communication devices, tablets, or laptops to school.

Cell Phones and Learning-related Issues

With so many students possessing a cell phone, the principals in this study were asked if they believed using these devices enhanced instruction and educational outcomes. One of the themes that developed in the responses to this question was that cell phones cause learning-related problems. This coincided with the apparent need to

regulate cell phones, as portrayed by the affirmation that almost all principals had policies regulating cell phones and other technological devices.

According to educators, cell phones distract students, make it easier for them to cheat and plagiarize, and contribute to distracted students (Klein, 2020). Banning cell phones in school has increased student performance on high-stakes tests (Beland & Murphy, 2015). Additionally, using the results of the Programme for International Student Assessment by area, they concluded that cell phone bans have a favorable influence on students' math and science performance (Beneito & Vicente-Chirivella, 2020). This research would support the views by the principals of the need to ban or regulate these devices.

The principals in the study, to varying degrees, did feel that cell phone use harms student academic performance. Almost 29% of the respondents felt that student cell phone usage had somewhere between a 0 and 10% effect on student academic performance. Almost 36% of the principals felt cell phones were responsible for between 10 and 20% of a negative effect on the academic performance of their students. Approximately 19% said cell phones had a detrimental influence on 30 to 40% academic performance, while nearly 10% believed the negative impact is between 50 and 60%. Approximately 6% of those polled said the ratio was higher than 60%.

The belief by the principals that cell phones hurt academic performance supports research conducted by Sunday et al. The outcomes of their study contribute to a better understanding of how smartphone addiction affects learning. According to their findings of this meta-analysis, smartphone addiction negatively impacts pupils' academic

performance. Students who spend so much time on their phones that they neglect their daily routines, participate in excessive smartphone usage, or text excessively on their phones are more likely to develop a behavioral addiction to smartphone use, which reduces academic performance. Consequently, active participation in exercising control and limited smartphone usage may boost student learning and academic achievement (Sunday et al., 2021).

Bullying and Behavior Issues

It is evident in the research that was conducted that the respondents believed that cell phones were responsible for some of their violations of the student code of conduct and led to students being the victims of bullying. This is supported by other research as well. According to Kopecky et al. (2021), limiting students' usage of cell phones benefits them tremendously. It provides something that neither family nor technology can provide—namely, the opportunity to socialize personally (and the related set of skills to resolve conflicts, establish and maintain a real friendship, manage their emotions, control their behavior, try out new opportunities, break the rules and accept responsibility for it, succeed in arguments, etc.) (Kopecký et al., 2021). Beneito and Vicente-Chirivella (2020) saw a significant reduction in bullying following a cell phone ban, notably among 12- to 14-year-old children and 15- to-17-year-old teenagers. Finally, Opennet-sponsored research on cyberbullying discovered that teenagers who are 'heavy mobile phone users are more likely to engage in online bullying and be bullied (*Cyberbullying Increases in Line With Mobile Phone Usage?* 2012).

Consequences for Violations to Code of Conduct

For violations of the established policies on student use of cell phones in schools, the principals in this research were asked if they issued consequences for possession of cell phones in school. They were also asked if the consequences get progressively more severe for the possession and other violations of the student code of conduct facilitated by cell phones.

Over 70% of the respondents issued progressively more severe consequences for possessing a cell phone in school. Over 63% of the principals gave progressively more severe consequences for using a cell phone in school. Cyberbullying by a cell phone was increasingly punished by over 84% of the principals and over 82% for cheating. Other violations to the student code of conduct by using a cell phone were progressively disciplined by almost 86% of the respondents.

The discipline consequences administered by the principals could relate to their opposing views on student cell phones and the policies negating their use in schools. These opposing views perceived by the principals and the policies that they enforce are based on the belief that cell phone use can lead to cheating or academic dishonesty, cyberbullying, distracted students, and other violations of the student code of conduct. This negative perception was detailed in the open-ended question in the research survey, which asked if cell phones can be beneficial to academics.

Relative to cell phone use and the perception that this use by students leads to violations of the code of conduct, the principals' responses varied. Thirty-five percent believed student cell phone use was responsible for anywhere between 0 and 10% of the

violations to the code of conduct at their schools. Thirty-seven percent of the respondents believed student cell phone use resulted in between 10 and 20% of the breaches, and 14% thought it was somewhere between 30 and 40%. Roughly 6% believed cell phone use resulted in violations between 50 and 60%. Over 7% believed cell phone use is responsible for over 60% of the student code of conduct violations at their schools.

The viewpoint of the respondents in this research that student cell phone use results in violations of the student code of conduct are supported by various research. As viewed by a group of teenagers who were surveyed, excessive smartphone use harmed their academic performance, caused classroom disruption, decreased cognitive skills, promoted pornography, reduced writing ability, created nervous tension, and ruined relationships. Adolescents who use their phones excessively may experience a loss of control over their behavior, feelings of irritability and anxiety, sleep disturbances, eating patterns, and relationship conflict (Yadav et al., 2021). Augner and Hacker (2012) evaluated the relationship between excessive or dysfunctional cell phone use and psychological health and discovered a link between poor emotional stability, persistent stress, depression, and phone use.

The researcher employed a Pearson correlation to examine the association between student mobile phone usage and academic achievement and infractions of the student code of conduct; answers from Ohio principals were gathered for this purpose. The findings indicate a substantial and positive association between the detrimental effect on student academic performance and breaches of their student code of conduct caused by cell phone usage by students at their schools.

It is evident by the responses to the survey questions in this research that there is a general perception by principals that student cell phone use can lead to violations of the student code of conduct and harm student academic performance. Current research studies support this general perception.

Age, Gender, and Years of Experience of the Principals and Perception of Student Cell Phone Use on Academic Performance and Violations to the Student Code of Conduct

The researcher used multiple linear regression to examine the effect of age, gender, and experience on principals' perceptions of student cell phone usage, code of conduct violations, and academic performance. Given the absence of a statistically significant regression model, the researcher accepted the null hypothesis that no association exists between age, gender, and experience and principals' perceptions of the percentage of negative effect on student academic achievement and violations to the code of conduct.

There are very few studies on the relationship between principals' age, gender, and years of experience and their views on cell phone use by students relative to their academic performance and student behavior. However, research on this subject comparable to teachers may be relevant because most principals are teachers before accepting their leadership roles in schools (*From Teacher to Principal: A Look at the Typical Pathway*, 2017). The results of these studies are similar to the researcher's conclusion that there is no significant relationship between these characteristics and the perceptions on the use of technology or cell phones by students. According to research by Mahdi and Sa'ad Al-Dera (2013), findings reveal no statistically significant variation in

how instructors use Information and Communication Technology (ICT) according to their age and experience as teachers. However, the results imply that male and female instructors use ICT differently in language instruction. Female instructors reported using ICT less often in their classrooms than male teachers. Refuting that gender corresponded to ICT use by teachers, the research conducted by Gebhardt et al. in 2019 resulted in gender having little correlation to ICT use. Research conducted on pre-service teachers by Papadakis in 2018 concluded no association between instructors' age and gender and their approval of mobile learning.

It appears that gender, age, and years of experience have a minimal influence on how a teacher feels about the student's use of cell phones in schools. Since most principals are teachers first, these findings may be relevant to how principals perceive cell phone use by students.

The Typology of the Principal's School and Perception of Student Cell Phone Use on the Academic Performance and Violations to the Student Code of Conduct

An Analysis of Variance (ANOVA) was used to evaluate statistically significant variations in principals' views of the proportion of unfavorable influence on academic achievement and the percentage of student code of conduct infractions attributable to student mobile phone usage among school typologies. The researcher concluded no statistically significant difference in the principals' perceptions of the percentage of students who violated their school's student code of conduct due to their cell phone use across school typologies. Similarly, there was no statistically significant difference in the

principals' perceptions and views on the percentage of students who experienced a negative impact on academic performance related to their school's typology.

Discussion

Emergent Themes from Open-ended Question

While it is reasonable to assume that the principals who replied had an unfavorable attitude about student cell phone usage, an open-ended question presented to them negated some of these conclusions. The question was, "With so many kids owning a mobile phone, do you feel it is feasible to employ these devices to improve teaching and educational outcomes? If so, please explain how." The researcher examined the replies to the open-ended question using the Nvivo 12 Plus program and analyzed the data at a latent level to determine the underlying patterns in the responses. Two themes emerged from the qualitative survey data: (a) student cell phone usage can be positive in educational settings, and (b) student cell phone usage in educational settings can be damaging.

The responses were prominent in one theme relating to the negative aspects of student cell phone use, such as cyberbullying, learning-related matters such as cheating, and distractibility. The second emergent theme that developed from this open-ended question was the positive aspects of student cell phone use, such as access to educational apps, ease of use, availability, and organizational benefits.

Negative Aspect of Student Cell Phone Use

Participants in this study expressed worries about mobile phone usage in schools and several voiced oppositions. Their main issue was cyberbullying. Some respondents

said that social media might create bullying and other matters in and out of the classroom. They also noted that social media addiction would lead pupils to be distracted in class. Many teachers feared that pupils using mobile phones would continually check them, causing distracted learning.

Cyberbullying

These fears by the principals are supported in recent studies. According to detailed research, cyberbullying gets increasingly prevalent as youngsters grow older (Ybarra et al., 2014). Prevalence estimates of cyberbullying victimization among teenagers vary between 15% and 50%. According to one meta-analysis of 80 researchers from various nations, the average percentage of teenage victimization was roughly 15% (DePaolis & Williford, 2014).

When it comes to access and use of a cell phone, cyberbullying incidents appear to increase. Access to digital technology is one aspect that may be significant in terms of the development of cyberbullying. Mobile technologies provide constant access, and teens unquestionably possess more mobile phones. Teen studies have shown a strong correlation between access and cyberbullying activity. One researcher discovered that owning a mobile phone enhanced a child's likelihood of becoming a victim of cyberbullying (*Childhood Access to Technology and Cyberbullying*, 2019).

Distracted Learning

Some of the respondents believe cell phones in class lead to distracted students. This perception is substantiated in research. When mobile phones were banned in schools, the London School of Economics study looked at how this changed exam scores.

According to a survey, teachers with phone bans had better test scores than those who did not. The study concluded that restricting mobile phone use can be a cheap way to reduce educational disparities (Beland & Murphy, 2015). Another research published in the Journal of Communication Education discovered that students who did not use mobile phones fared better in various categories. They took 62% more notes, remembered more explicit material from class, and scored a full letter grade and a half better on a multiple-choice exam than those actively using their phones (Kuznekoff & Titsworth, 2013). The University of Chicago discovered that even when cell phones are turned off, face down, or stored away, their mere presence impairs people's cognitive capacity (Ward et al., 2017).

Positive Aspect of Student Cell Phone Use

The principals responding to the survey believed that cell phones were an intricate part of society and that almost every student possessed one. They detailed various methods that cell phones could be used to improve educational outcomes. They expressed that cell phone use can benefit students and teachers if used correctly. Both need to be trained in the proper use of cell phones to achieve educational benefits.

Principals mentioned a variety of educational outcomes and suggested that cell phones could be integrated with existing devices to maximize benefit. Additionally, they noted that students could use their cell phones to access online grades, applications, surveys, calculators, and assignments, check for missing assignments, receive teacher feedback, communicate with teachers, record lectures, and retrieve information.

Additionally, respondents believed that students are more familiar with how their cell phones work and that cell phones are frequently faster than school-provided devices.

Research does suggest that the use of cell phones by students can improve academic outcomes. Mobile learning offers a solution to a lot of our educational challenges. Smartphones and tablets facilitate innovation and provide students, instructors, and parents' access to digital information and tailored assessment, critical in a post-industrial environment. When combined with near-universal 4G/3G wireless access, mobile devices are crucial for students to boost their learning (West, 2013). As smartphone ubiquity and computing capabilities increase exponentially, today's smartphones offer limitless opportunities for increasing student engagement, enhancing student understanding, and extending learning beyond the classroom, particularly for students who do not have access to the internet at home or attend a school where one to one technology device for each student is not an option.

Additionally, smartphones simplify instructors to support and motivate student learning and creativity while simultaneously improving motivation (Ehnle, 2021). Student success will improve dramatically due to more time on task when students utilize mobile learning devices such as cell phones for educational reasons within the classroom (Norris et al., 2011).

Researchers also believe that education policies, teacher training, cognitive-behavioral interventions, and the development of specific teaching and learning practices that address reduction and addiction to smartphone use could help students maximize study time and improve learning effectiveness (Sunday et al., 2021). This is

consistent with the beliefs of the principals in this study. While participants supported the use of cell phones and desired increased monitoring in the educational system, they believed that cell phones could be used appropriately or inappropriately and that students needed education on using them appropriately. They recommended that cell phones be used with caution and under the supervision of a classroom teacher to avoid misuse.

Summary

According to the respondents, cell phones are a reality of society and have significance in day-to-day life; therefore, prohibiting such an essential part of life will not be beneficial in the long run. Even though there appear to be many negative characteristics of allowing students to use cellphones in schools, the principals in this research also believed that cell phones were compelling tools in the 21st century and that when other devices are not available, cell phones serve an essential purpose in enhancing educational outcomes when they are available.

Cell phones and students using these devices are not going away. According to a Pew Research Center poll in 2018, around 95% of teens have access to a smartphone. These devices have become not only more prevalent but even more technologically advanced. With the ubiquitous nature of these devices and their influence on society, it can be concluded that through the research, educators, including school principals, must learn how to accept these devices and adapt and thrive with them (*Teens, Social Media & Technology 2018*, 2018).

If a well-rounded education in the 21st century includes technological literacy, educational leaders need to facilitate the adoption and proper use of cell phones within

their schools. As computers, cloud computing, and mobile devices grow increasingly significant globally, more individuals will need to comprehend those ideas. Technological literacy provides pupils with the fundamental knowledge to understand which devices accomplish which jobs and why. This comprehension eliminates the daunting sense that technology often elicits. After all, if you don't grasp how technology works, it's as if it's magic. However, technological literacy reveals the high-powered tools that power today's society. As a consequence, students can better adapt to their surroundings. They have the potential to play an essential role in its progress (Stauffer, 2021)

The principals who responded to the survey's open-ended question regarding the possible benefits of cell phone use in their schools align with the International Society for Technology in Education (ISTE). ISTE standards for educational leaders focus on the leaders' knowledge and behaviors to empower teachers and facilitate student learning. They are centered on some of education's most pressing but lasting issues today — equality, digital citizenship, visioning, team and system building, continuous improvement, and professional advancement (*ISTE Standards: Education Leaders*, n.d.). Educational leaders should adapt to future societal trends while simultaneously preparing their students for the future.

Significance of the Study

The research is relevant to learning in the 21st century in that it details the pros and cons of utilizing cell phones within a school environment. It also describes the notion that educational leaders must embrace this technology and use it to increase educational outcomes due to the ubiquitous presence of cell phones. Embracing student use of cell

phones within schools impinges on educational leaders establishing policies and procedures to assist students in using these devices at the most reasonable times. Educational leaders must also adapt these rules to the ever-changing developments in the advancement of cell phone technology. Finally, the research advocated the need for teachers to use cell phones to enhance instruction, engage students, and elevate academic achievement.

Phones in the classroom promote digital literacy. Almost all youngsters nowadays grow up surrounded by computers and smart gadgets. Indeed, most children get their first smartphone at the age of 10. Innovative schools should guide young "digital natives" in the responsible use of technology early, allowing them to develop computer skills necessary for success in present and future employment markets (VanDuzer, n.d.)

According to research published by World Scientific News, as mobile phone technology advances, smartphones may favorably contribute to student learning, curriculum, and overall academic performance. Of the 274 students polled (159 men, 115 women) 36.5% felt that mobile phones help them study more effectively. Cell phones, the students acknowledged, are also helpful for informative exchanges between classmates and instructors. While there are some drawbacks of using smartphones in the classroom, such as distractions, up-training, and poor efforts at multitasking, the advantages significantly outweigh the drawbacks (Hossain, 2019). Educational leaders and teachers can seize upon this abundant ownership and familiarity of cell phones by their students to advance the students' academic achievement, assess academic deficiencies,

communicate, and relate more to their clientele and other stakeholders, and turn the negative aspects of student cell phone use into a positive one.

The ISTE Standards for Educational Leaders provide a framework for educational leaders to follow regarding the implementation of technology and its use by teachers and students. Standard 3.3 is relevant to this research on the rationale of why principals should utilize cell phones in instruction and facilitate training for their teachers and students on their use (*ISTE Standards: Education Leaders*, n.d.). This is especially true if a school district does not have the financial ability to provide technological devices such as laptops or tablets to their students. These standards can be used as an outline for principals to initiate conversations on student cell phone use and for the eventual implementation of cell phones in their schools to enhance educational outcomes and engage students. These standards are detailed below.

3.3 Empowering Leaders create a culture where teachers and learners are empowered to use technology in innovative ways to enrich teaching and learning. Education leaders

A. Empower educators to exercise professional agency, build teacher leadership skills and pursue personalized professional learning.
B. Build the confidence and competency of educators to put the ISTE Standards for Students and Educators into practice.
C. Inspire a culture of innovation and collaboration that allows the time and space to explore and experiment with digital tools.

D. Support educators in using technology to advance learning that meets the diverse learning, cultural, and social-emotional needs of individual students.

E. Develop learning assessments that provide a personalized, actionable view of student progress in real-time (*ISTE Standards: Education Leaders*, n.d.).

Research and other studies have revealed that cell phones can enhance instruction and benefit student learning if appropriately managed. As noted in the ISTE 3.3, principals can work with teachers to utilize student cell phones to personalize learning, innovate and collaborate, explore, advance their students' learning and cultural competencies, and provide real-time feedback on their learning progression. The students already own the devices and are comfortable with their use. Principals need to investigate methods to manage and take advantage of these technologies.

The Partnership for 21st Century Learning has developed frameworks for 21st Century Learning that were established with teachers, education professionals, and business leaders to describe and explain the skills and knowledge students need to excel in work and life and the support structures required to achieve 21st-century learning objectives (*Battelle for Kids*, n.d.).

Two of the student outcomes from these frameworks are explained below.

> Learning and innovation skills separate students who are prepared for increasingly complex life and work environments in today's world and those who are not. These skills include creativity and innovation, critical thinking and problem solving, communication, and collaboration.

> Today, we live in a technology and media-driven environment, marked by access to an abundance of information, rapid changes in technology tools, and the ability to collaborate and make individual contributions on an unprecedented scale. Effective citizens and workers must exhibit a range of functional and critical thinking skills, such as information literacy, media literacy, and ICT (Information, Communications, and Technology) Literacy. (*Framework for 21st Century Learning*, 2019)

Cell phones can be utilized by both teachers and students to develop the skills and master the learning outcomes detailed in the 21st Century Learning Framework and, precisely, the learning outcomes listed above. With cell phone use and possession being so prevalent by students today, it is up to today's principals to facilitate using this readily available technology. It is also up to educational leaders to seek professional development for their teachers to use these devices effectively and develop methods to instruct students on digital literacy and responsibilities.

Future Research

Considering that policies governing cell phone use by students in schools are generally restrictive, research needs to be conducted on different school policies and cell phone use. Mainly focusing on policies that effectively manage the use of cell phones by students and simultaneously allow students to use the devices as a learning tool. With the prevalence of these devices, it may be time to move away from policies of restricting possession to cell phones to focus more on how cell phones are being used in school.

It appears that leadership personality, style, and comfort level with technology, as opposed to the principal's age, years and experience, and gender may be a factor in whether a principal will take advantage of cell phones as an educational tool. Research can be conducted on principals who allow students and teachers to use cell phones as an educational tool and those who oppose their use. The principals' leadership style and comfort level with technology can be examined relative to the ISTE standards and the 21st Century Learning Framework (*Framework for 21st Century Learning*, 2019).

It also should be considered that in this research, the questions were asked to all administrators, such as principals, assistant principals, and possibly deans of students. Differentiating the response by role may have resulted in a more in-depth breakdown of the data collected based on these various job responsibilities. .

Further study can take place on principals from school districts with different typologies. The research conducted had a small sample size of principals from urban districts that suffer from a high poverty rate. Their perceptions on cell phone use and its benefits and pitfalls may differ from principals from other typological areas of the state and country. A study could just focus on principals in the country that lead schools in these typological areas.

Principals from a school district with the financial means to provide a technological device may have a different perspective on the use of cell phones than ones that their students have no access to these devices through their schools. The student's cell phones may be the only access to technology available to them. Cell phones can give access to these students and expose them to a world that they would never have access to.

Their cell phones could potentially be an equalizer to educational attainment and skill that would otherwise not be available to them. These differences in school districts with these characteristics can be studied.

Case studies, focus groups, and personal interviews with principals can be investigated to discover in-depth details of success stories and drawbacks to students using and possessing cell phones in schools. This type of research can find themes and characteristics of teachers and principals that successfully implement cell phones as educational tools.

With the need for professional development on the effective use of cell phones for educational leadership and teachers, a study can be undertaken that investigates exemplary models of this type of training.

Finally, research can be conducted with students. Reviewing students' use of cell phones in school and the impact of school policies on this use can be helpful. Finding great examples of learning models of digital citizenship and responsibilities can also be reviewed and studied.

Summary

Cell phones and smartphones have become essential communication and research tools for all ages in today's society and are possessed by almost everyone. We use cell phones to talk or message others, post pictures and make comments, socialize, find directions, investigate topics and discover answers to problems, and many other uses that assist us in our lives. In schools, these devices can be used for the assessment of learning, calculators, conducting research, communicating to students and parents, a calendar,

reminders for assignments, a recording device for lectures, a camera to take pictures of assignments and teacher notes, accessing educational applications on the phones, as well as other educational tools. These devices are becoming more technologically powerful and have become pocket-size computers and can now be used as such. The students in middle and high school, and even younger, possess them and are very adept at using them to their maximum potential. It is up to today's educational leaders to figure out how to harness the use and knowledge of these devices by students to better their educational and academic experiences and outcomes. Policies can be amended, and structures and procedures can be implemented to limit students' negative aspects of cell phone use but simultaneously allow them to benefit from their use.

As discussed in this research and in prior studies, there are both disadvantages and advantages to students using cell phones in schools. These devices can be a distraction, a mechanism for bullying, sexting, and academic fraud. Nevertheless, Pandora's Box has long been opened, and educational leaders cannot bury their heads in the sand. Banning these devices in schools is very difficult and maybe confrontational but somewhat naive. Students are still using them despite the policies that prohibit them.

Educational leaders can continue to fight the advancement of technology and cell phones to limited success, or they can use these devices to their advantage and utilize them as educational tools. Working with students, parents, teachers, principals, and other educational professionals, education leaders can educate all stakeholders on the benefits of allowing students to use these devices as educational tools. These leaders can also work with these stakeholders to develop policies and procedures that will effectively

regulate these devices not to hinder the educational process and protect student privacy and welfare. As the pandemic ravaged our county, more students and teachers were forced to become more accustomed to learning and teaching virtually through phones or other technological devices. Because of this fact, it may be time to review these restrictive policies on cell phones and other technological devices and begin to implement policies that adjust to their use as educational tools.

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APPENDICES

APPENDIX A

PERMISSION TO AMEND PREVIOUS SURVEY QUESTIONS

Crestwood LOCAL SCHOOLS

Dave Toth <dtoth@crestwoodschools.org>

Fwd: Permission to use your survey for research
1 message

david toth <dmtoth66@yahoo.com> Mon, May 10, 2021 at 12:07 PM
To: "dtoth@crestwoodschools.org" <dtoth@crestwoodschools.org>

David M. Toth

Begin forwarded message:

From: "Coffey, Kent" <KCoffey@colled.msstate.edu>
Date: February 16, 2021 at 6:16:45 PM EST
To: david toth <dmtoth66@yahoo.com>
Subject: RE: Permission to use your survey for research

Very interested in your results. Of course, you may use the survey in any way that benefits you.

Kent Coffey

From: david toth <dmtoth66@yahoo.com>
Sent: Tuesday, February 16, 2021 11:17 AM
To: Coffey, Kent <KCoffey@colled.msstate.edu>
Subject: Permission to use your survey for research

Dr. Coffey, I hope all is well.

I am conducting research for my dissertation at Youngstown State Univesity in Youngstown, Ohio. My research is on the perceptions of high school principals and the use of cell phones while in their schools and their views on their district's policies relative to cell phone use by students. In my research, I discovered your survey. If possible, I am seeking permission to use your survey in my research for my dissertation. Please let me know if this is a possibility.

Thank you for your time.

David M. Toth

ST. MICHAEL - ALBERTVILLE SCHOOLS

EXCELLENCE IS OUR TRADITION

May 5th, 2021

To whom it may concern;

I grant David M. Toth full permission to use, modify and/or replicate the survey instrument used in my dissertation "Cell Phones in Minnesota High Schools: Principals' Perceptions of Impact and Policy."

Please contact me if there are any questions regarding the permission that I have granted Mr. Toth.

David Holler | Assistant Principal
STMA Middle School East
4862 Naber Ave NE
St Michael MN 55376
(763) 497-2655
davidh@mystma.org

APPENDIX B

LETTER TO OAASA ZONE DIRECTORS

Dear Board of Directors,

My name is David Toth, and I am currently the Superintendent of the Crestwood Local School District in Mantua, Ohio. Prior to my current position, I was a high school administrator for 13 years. Besides serving as a Superintendent, I am conducting dissertation research to receive a Doctorate in Educational Leadership from Youngstown State University.

In my research, I propose a quantitative study design that investigates student cell phone policies and discipline among middle and high principals in Ohio and their beliefs on its effect on academic performance and student behavior. Recently, as Superintendent, our school district enacted an even stricter student cell phone use policy in our middle and high schools. We have witnessed positive results from this policy. These positive results and over 13 years as a high school administrator managing student cell phone use created my interest in this research.

To continue my research, I am asking you for assistance. If possible, would you please email this letter and the link below to all the Principals and Assistant Principals within your Zone for the Ohio Association of Secondary School Administration. The link contains just twelve questions through survey monkey. All responses are anonymous and will be confidential. I would greatly appreciate any assistance and time on this matter. Please feel free to contact me with any questions or concerns.

Survey Monkey Link

https://www.surveymonkey.com/r/L29VTTW

Sincerely,

David M. Toth

David Toth
Superintendent of Crestwood Local Schools
Youngstown State University Doctoral Student
Cell phone: 216-225-9770

APPENDIX C

LETTER EMAILED TO SCHOOL PRINCIPALS

Dear School Administrator,

My name is David Toth, and I am currently the Superintendent of the Crestwood Local School District in Mantua, Ohio. Before my current position, I was a high school administrator for 13 years. Besides serving as a Superintendent, I am conducting dissertation research to receive a Doctorate in Educational Leadership from Youngstown State University.

In my research, I propose a quantitative and qualitative study design that investigates student cell phone policies and discipline among middle and high principals in Ohio and their beliefs on its effect on academic performance and student behavior. As Superintendent, our school district recently enacted an even stricter student cell phone use policy in our middle and high schools. We have witnessed positive results from this policy. Over 13 years as a high school administrator managing student cell phone use, these positive results have created my interest in this research.

To continue my research, I am asking you for assistance. If at all possible, please complete this survey at the link below. The link contains just ten questions through survey monkey and should only take two minutes to complete. All responses are anonymous and will be confidential. I would greatly appreciate any assistance and time on this matter. Please feel free to contact me with any questions or concerns.

https://www.surveymonkey.com/r/7Q8PLDL

Thank you for your time and consideration.

David M. Toth

David Toth
Superintendent
Crestwood Local Schools
(216) 225-9770

APPENDIX D

COOPERATION LETTER FROM OASSA

OHIO ASSOCIATION OF SECONDARY SCHOOL ADMINISTRATORS
8050 North High Street • Suite 180 • Columbus, Ohio 43235-6484
614/430-8311 Fax 614/430-8315

May 12, 2021

Youngstown State University Internal Review Board,

This letter is to document that The Ohio Association of Secondary School Administrators (OASSA) will be cooperating with Mr. David Toth as he collects data from Ohio school administrators. Mr. Toth will be providing the survey instrument that explores a principal's perceptions on cell phone use and procedures used to regulate cell phone use within their schools.

OASSA will assist Mr. Toth in the distribution of the survey tool, making it available through members to a pool of Ohio secondary school leaders.

Dr. Timothy Freeman

OASSA Executive Director

APPENDIX E

OBRINGER AND COFFEY'S ORIGINAL SURVEY QUESTIONS AND REVISED RESEARCH QUESTIONS

For questions 1-8 circle Yes or No:

Yes No 1. Does your school/district have a written policy regarding cell phones?

Yes No 2. Does your school permit cell phone use by teachers?

Yes No 3. Does your school permit cell phone use by students?

Yes No 4. Does your school allow students to leave cell phones on silent mode?

Yes No 5. Do teachers have access to a hard-wired phone in their classrooms?

Yes No 6. Do you believe that teachers who utilize cell phones use them only for school-related business?

Yes No 7. Does your school district supply cell phones for administrators?

Yes No 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 disagreeing, and SD for strongly disagree:

SA A D SD 9. Direct instructional time is lost due to cell phone use by teachers.

SA A D SD 10. Teachers having cell phones improve school safety.

SA A D SD 11. Teachers having cell phones facilitate prompt teacher-parent communication.

SA A D SD 12. Major incidents of violence (e.g., Columbine High School) influenced my school's/district's policy on cell phones.

SA A D SD 13. Parents are supportive of the school's overall cell phone policy.

SA A D SD 14. Cell phone use by teachers adversely affects the sustained focus of teachers in the classroom/students.

SA A D SD 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 the school locker room, nurse's office, uploading videos to the web, etc..) or students taking photos of a test for friends?

Modified Research Questions

Ohio High School and Middle School Principals (Grades 6-12) Perceptions and Procedures on Student Cell Phone Use within their Schools

1. What is your school district's typology as characterized by the Ohio Department of Education? To view your district's typology, click on this link http://education.ohio.gov/Topics/Data/Frequently-Requested-Data/Typology-of-Ohio-School-Districts.

Rural - High Student Poverty & Small Student Population

Rural - Average Student Poverty & Very Small Student Population

Small Town - Low Student Poverty & Small Student Population

Small Town - High Student Poverty & Average Student Population Size

Suburban - Low Student Poverty & Average Student Population Size

Suburban - Very Low Student Poverty & Large Student Population
Urban - High Student Poverty & Average Student Population

Urban - Very High Student Poverty & Very Large Student Population

2. What is your age?

25-34

35-44

45-54

55-64

65+

3. What gender do you identify with?

Male

Female

Other

4. How many years have you been a school administrator?

0-3 years

3-6 years

6-9 years

9-12 years

Over 12 years

5. Does your school/district have written policies and procedures regarding the following? (Select all that apply):

A. Student cell phone use in school
B. Students bringing in their own technological devices to school
C. Other personal communication devices

6. Does your school/district supply tablets, laptops, or other technological devices to students for educational purposes in grades six through twelve to use in school?

Yes

No

7. Does your school/district allow students to use cell phones for academic purposes in school?

Yes

No

8. Do you administer progressive discipline consequences for a student possessing a cell phone in school?

Yes

No

9. Do you administer progressive disciple consequences for the following inappropriate uses of a cell phone by students in your school? (Check all that apply)

A. Using a cell phone at school
B. Cyberbullying with a cell phone
C. Using a cell phone involved in academic dishonesty (cheating)
D. Using a cell phone that results in other violations of the student code of conduct

10. What do you perceive to be the percentage of the negative impact on academic performance that can be attributed to students using cellphones in your school?

Between 0-10%

Between 10-20%

Between 30-40%

Between 50-60%

Between 60-70%

Between 70-80%

Between 80-90%
Between 90-100%

11. What do you perceive as the percentage of violations to your student code of conduct that can be attributed to students' use of cell phones in your school?

Between 0-10%

Between 10-20%

Between 30-40%

Between 50-60%

Between 60-70%

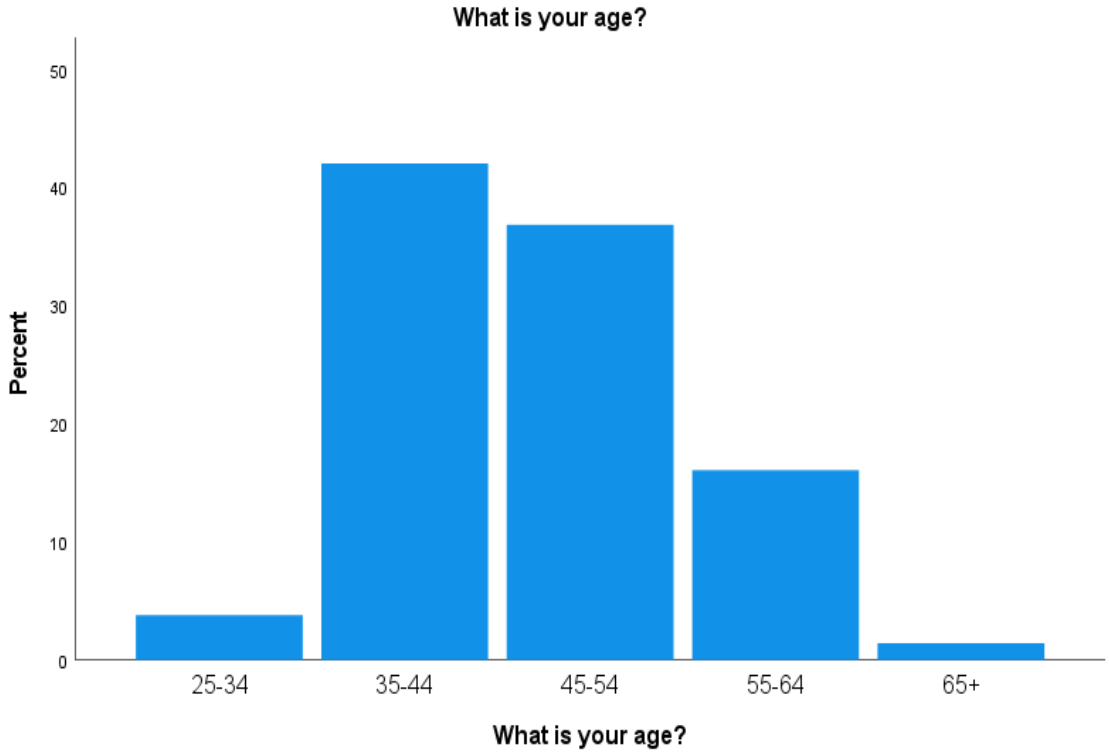
Between 70-80%

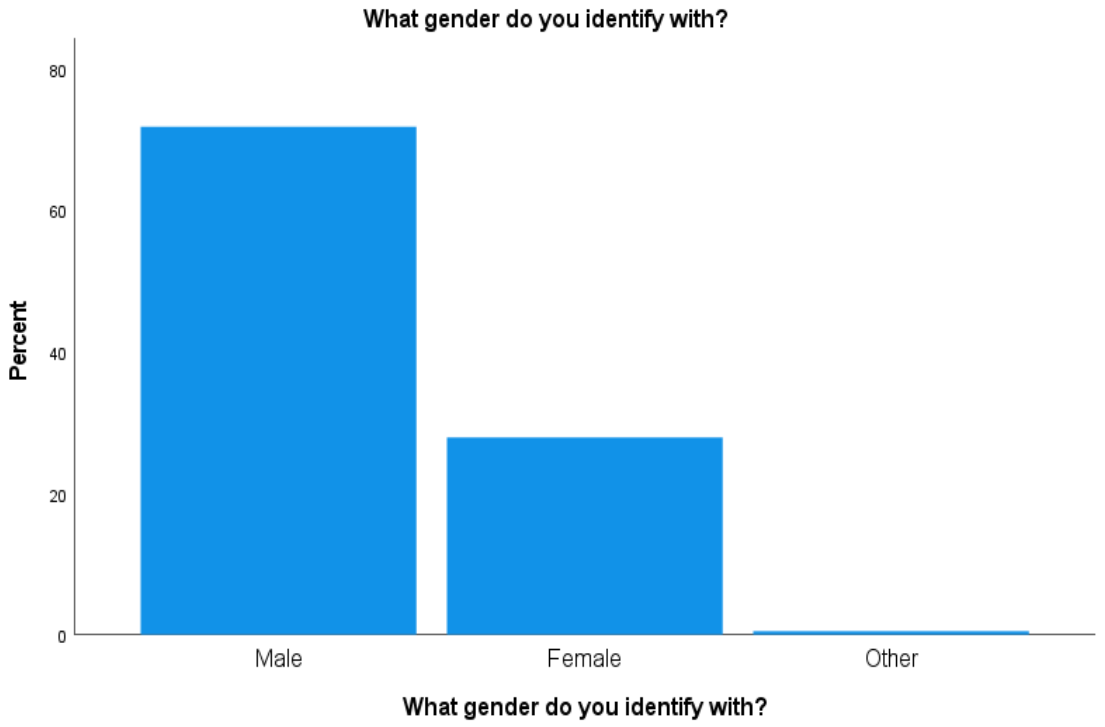
Between 80-90%

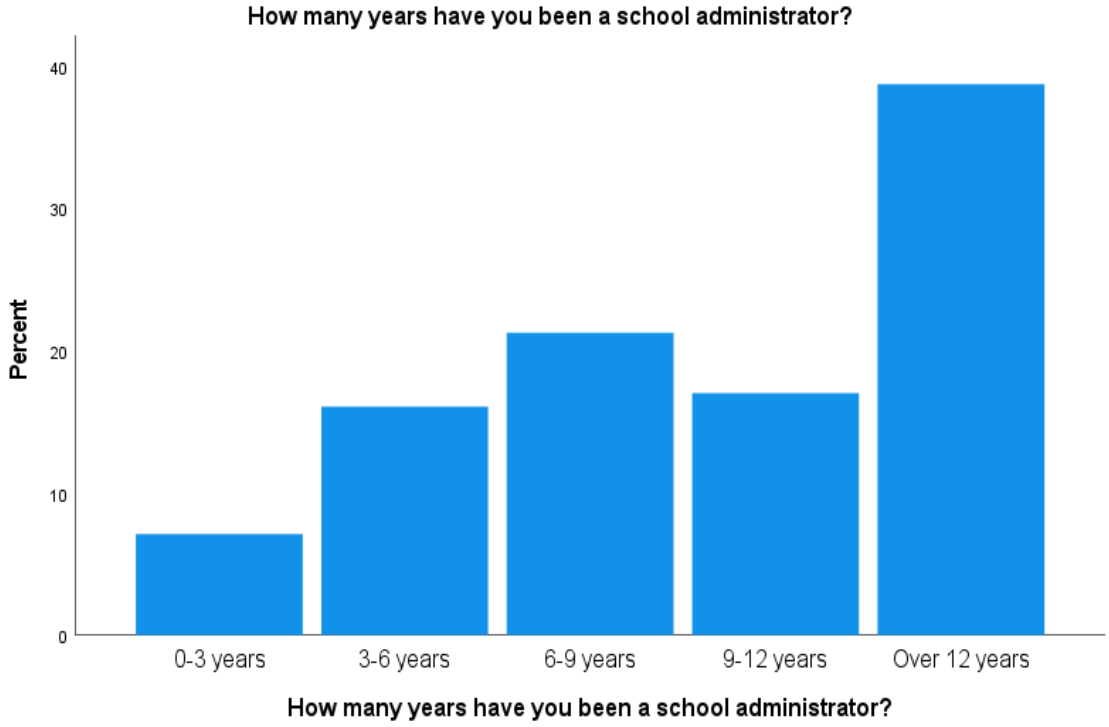
Between 90-100%

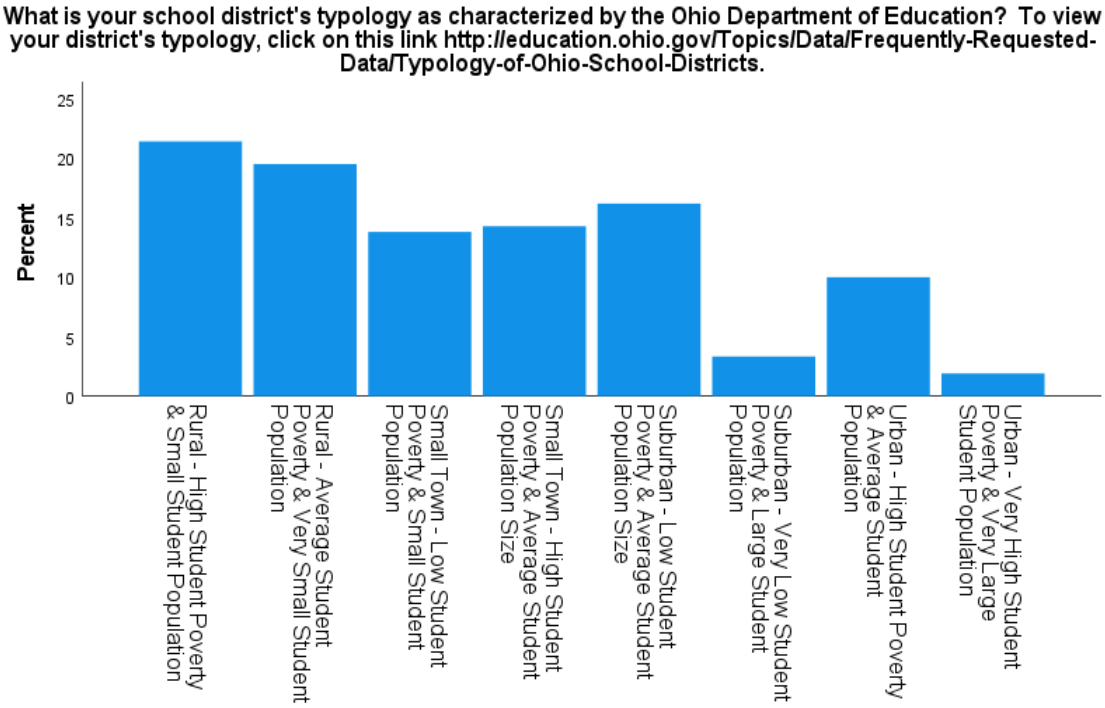
APPENDIX F

BAR CHARTS

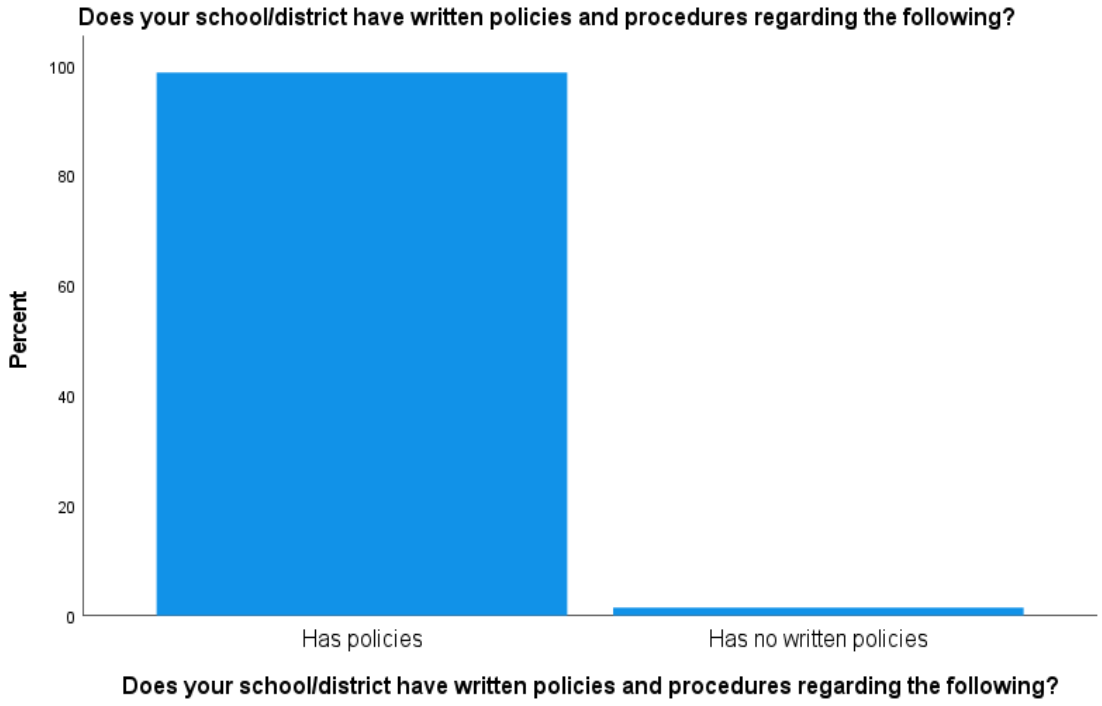


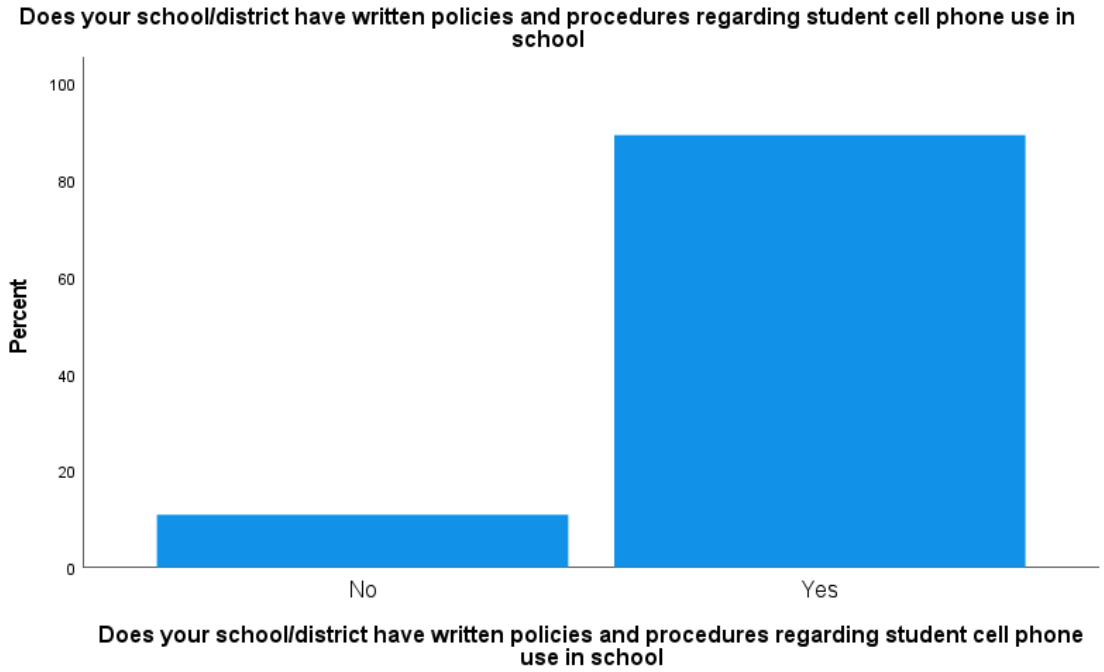

What gender do you identify with?
Percent
80
60
40
20
0
Male
Female
Other
What gender do you identify with?

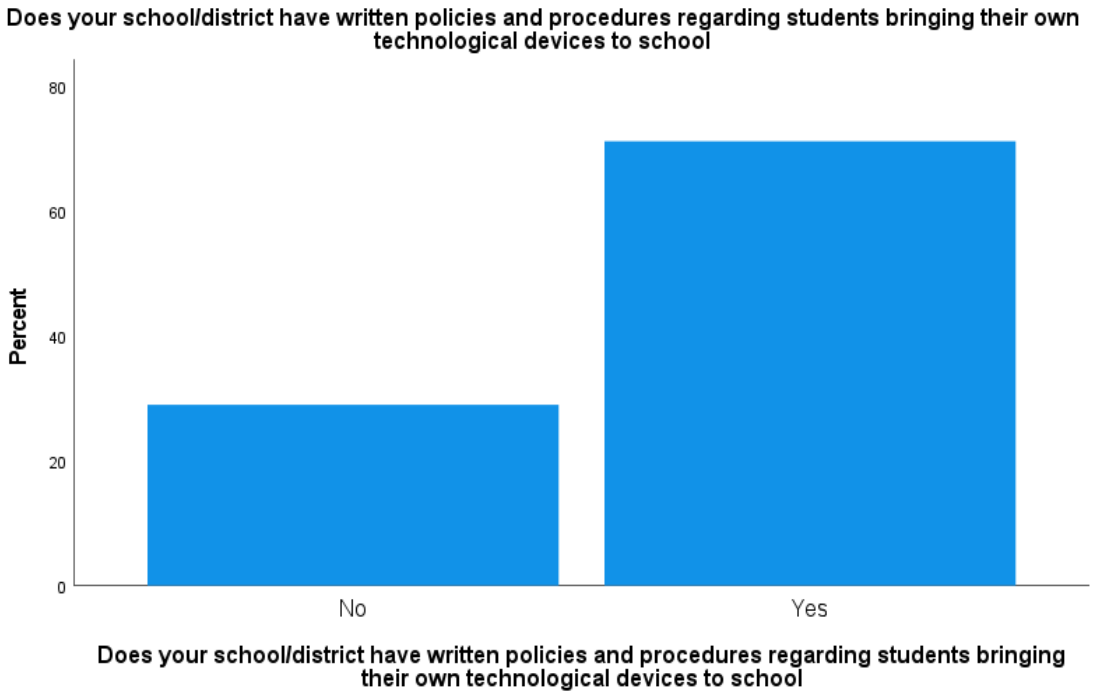

How many years have you been a school administrator?
Percent
40
30
20
10
0
0-3 years
3-6 years
6-9 years
9-12 years
Over 12 years
How many years have you been a school administrator?

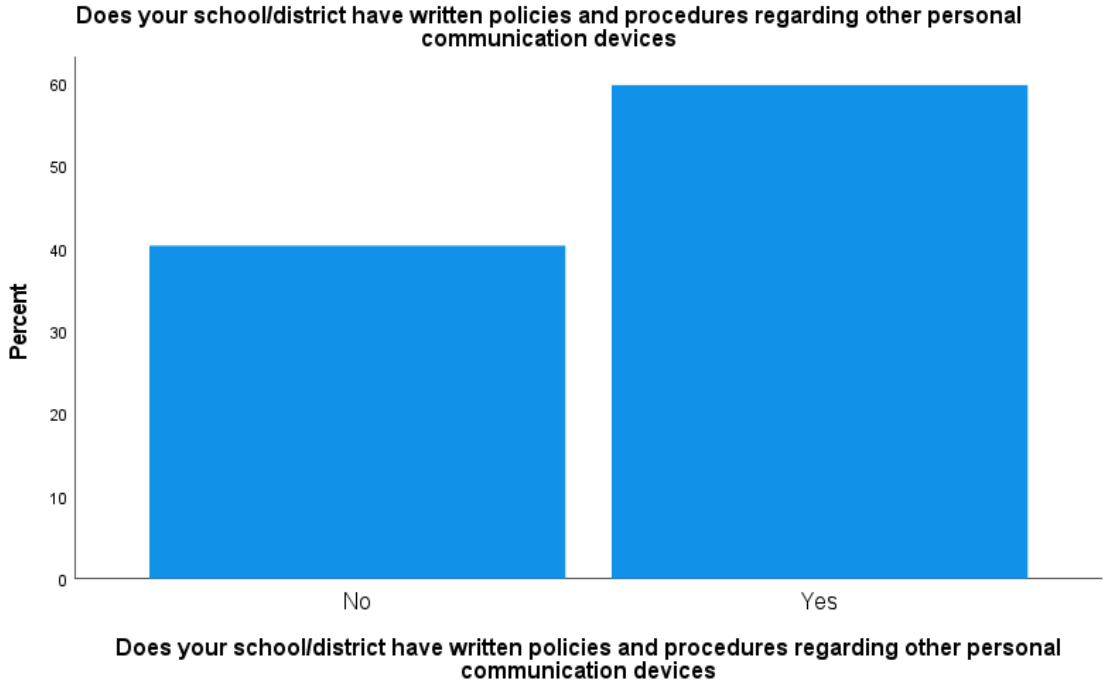

What is your school district's typology as characterized by the Ohio Department of Education? To view your district's typology, click on this link http://education.ohio.gov/Topics/Data/Frequently-Requested-Data/Typology-of-Ohio-School-Districts.
Percent
25
20
15
10
5
0
Rural - High Student Poverty & Small Student Population
Rural - Average Student Poverty & Very Small Student Population
Small Town - Low Student Poverty & Small Student Population
Small Town - High Student Poverty & Average Student Population Size
Suburban - Low Student Poverty & Average Student Population Size
Suburban - Very Low Student Poverty & Large Student Population
Urban - High Student Poverty & Average Student Population
Urban - Very High Student Poverty & Very Large Student Population

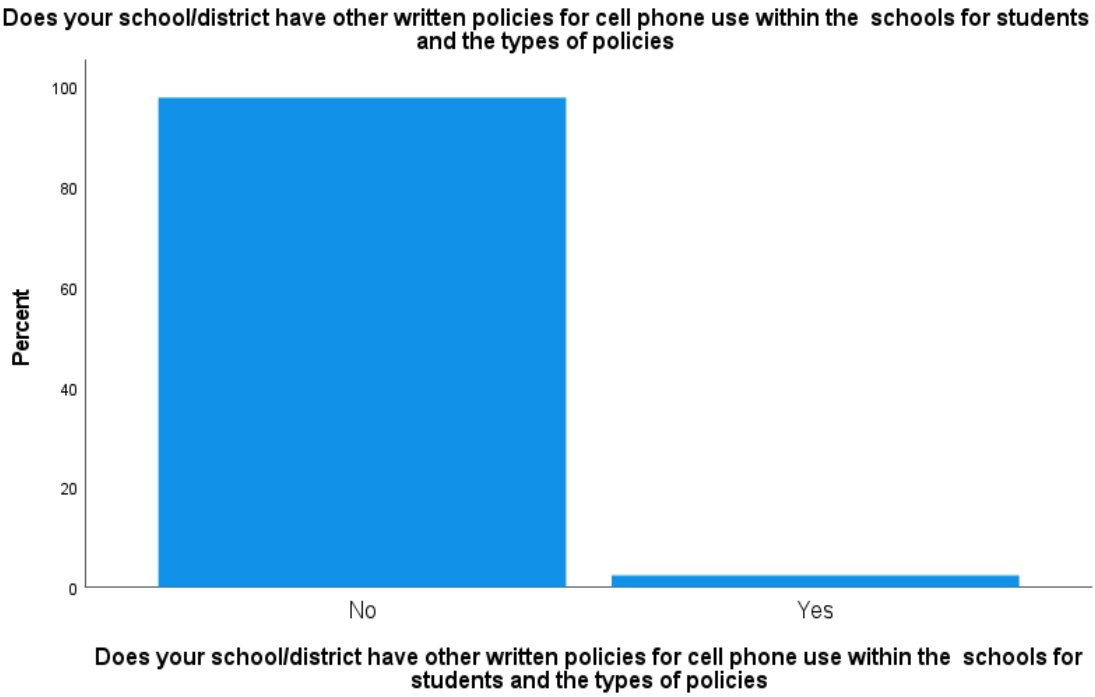
BAR CHARTS FOR RESEARCH QUESTION 1





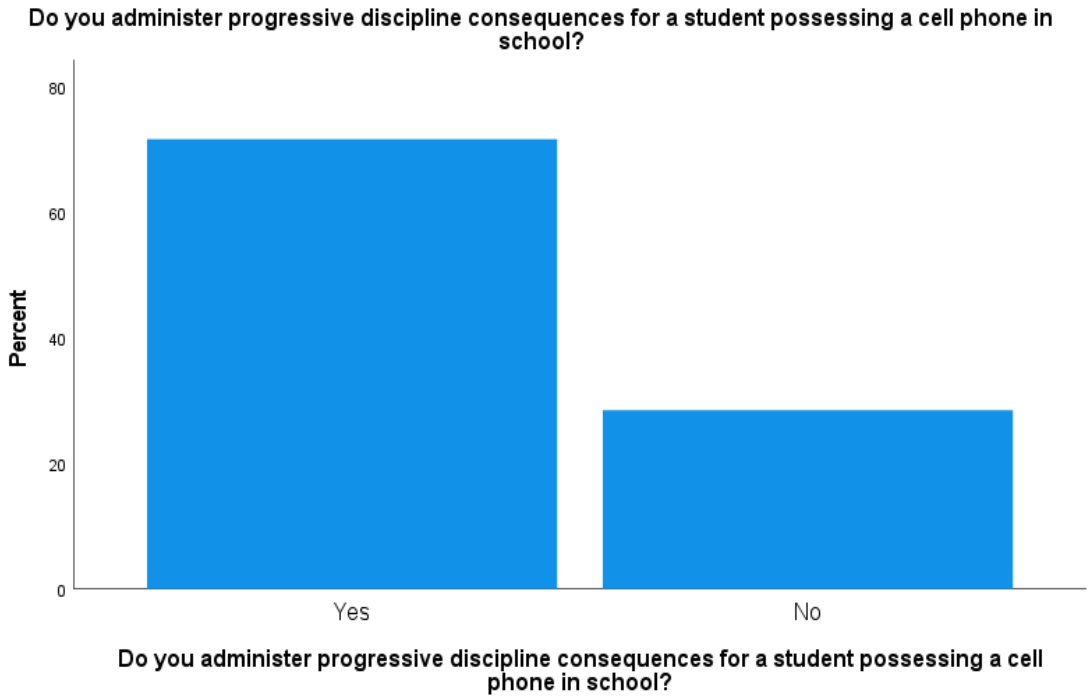

Does your school/district have written policies and procedures regarding students bringing their own technological devices to school
Percent
80
60
40
20
0
No
Yes
Does your school/district have written policies and procedures regarding students bringing their own technological devices to school

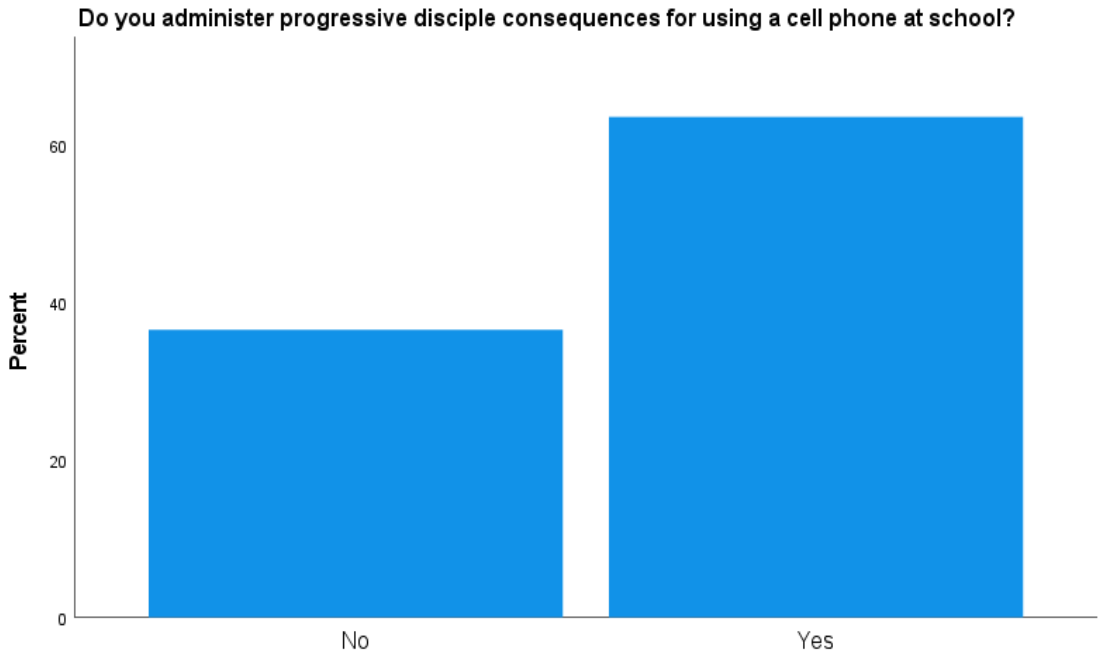

Does your school/district have written policies and procedures regarding other personal communication devices
Percent
60
50
40
30
20
10
0
No
Yes
Does your school/district have written policies and procedures regarding other personal communication devices

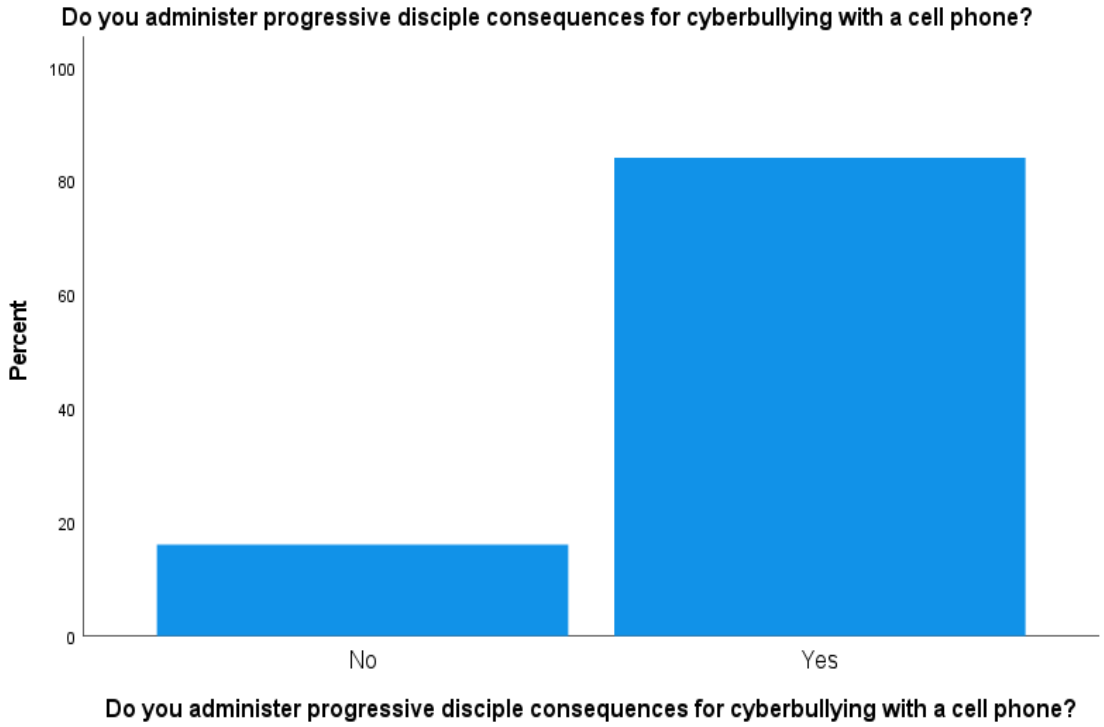

Does your school/district have other written policies for cell phone use within the schools for students and the types of policies
Percent
100
80
60
40
20
0
No
Yes
Does your school/district have other written policies for cell phone use within the schools for students and the types of policies

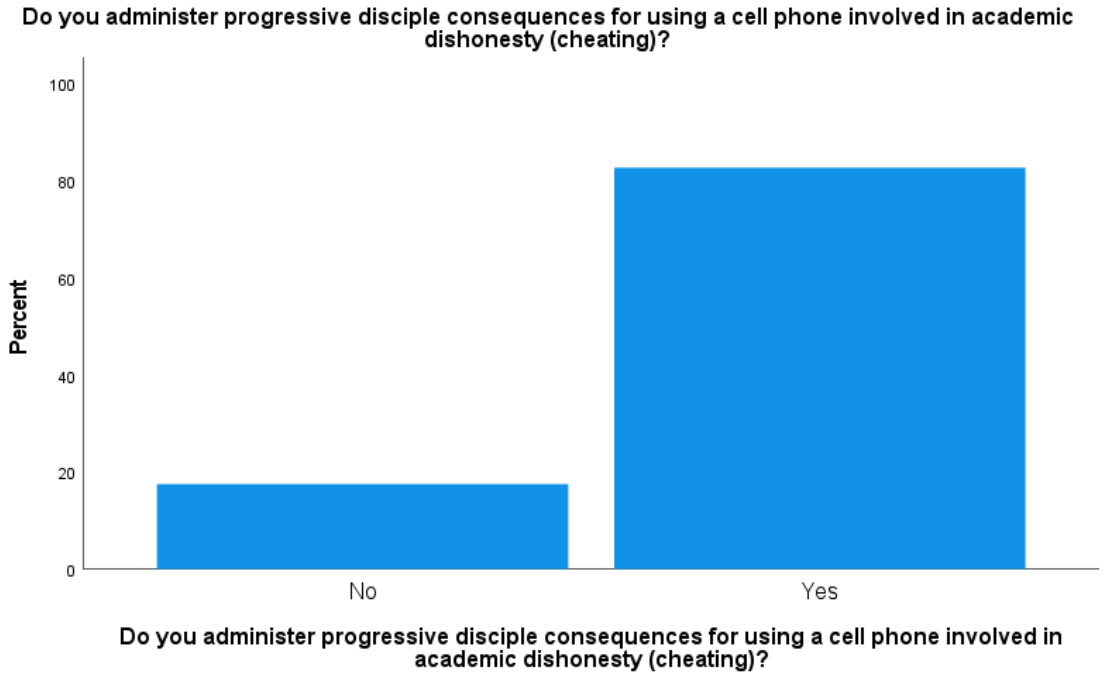
APPENDIX G

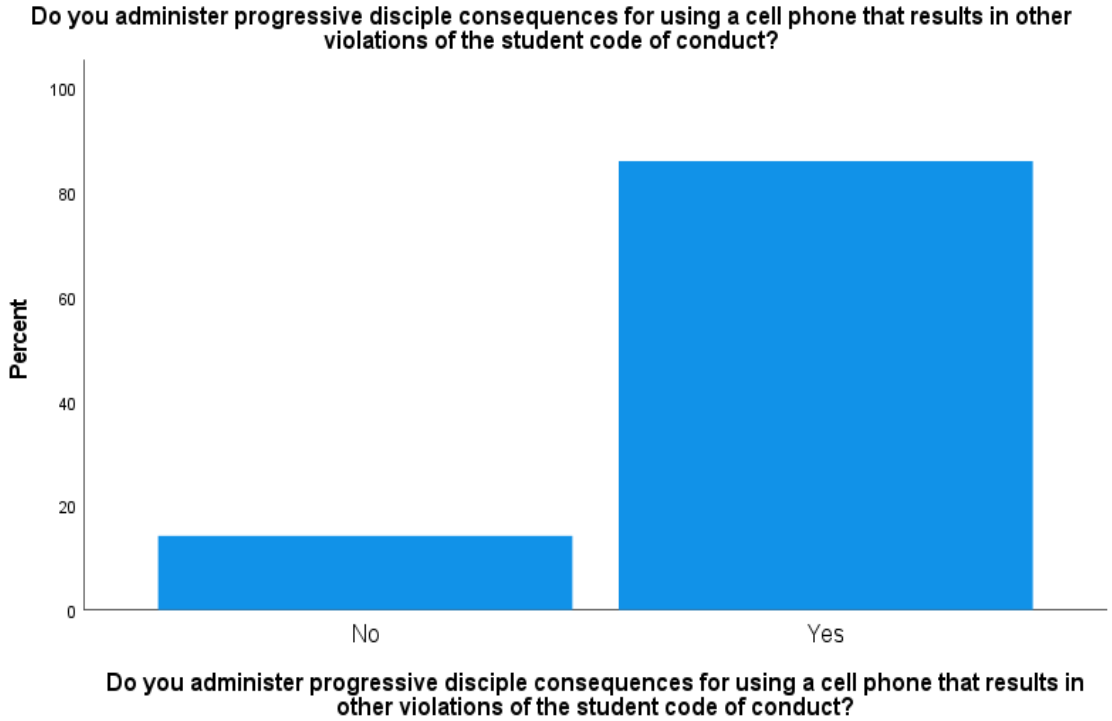
BAR CHARTS FOR PRINCIPALS ADMINISTERING PROGRESSIVE DISCIPLINE FOR VIOLATIONS OF POLICIES ON STUDENT CELL PHONE USE (RESEARCH QUESTIONS 3 & 4)




Do you administer progressive disciple consequences for using a cell phone at school?
Percent
60
40
20
0
No
Yes
Do you administer progressive disciple consequences for using a cell phone at school?

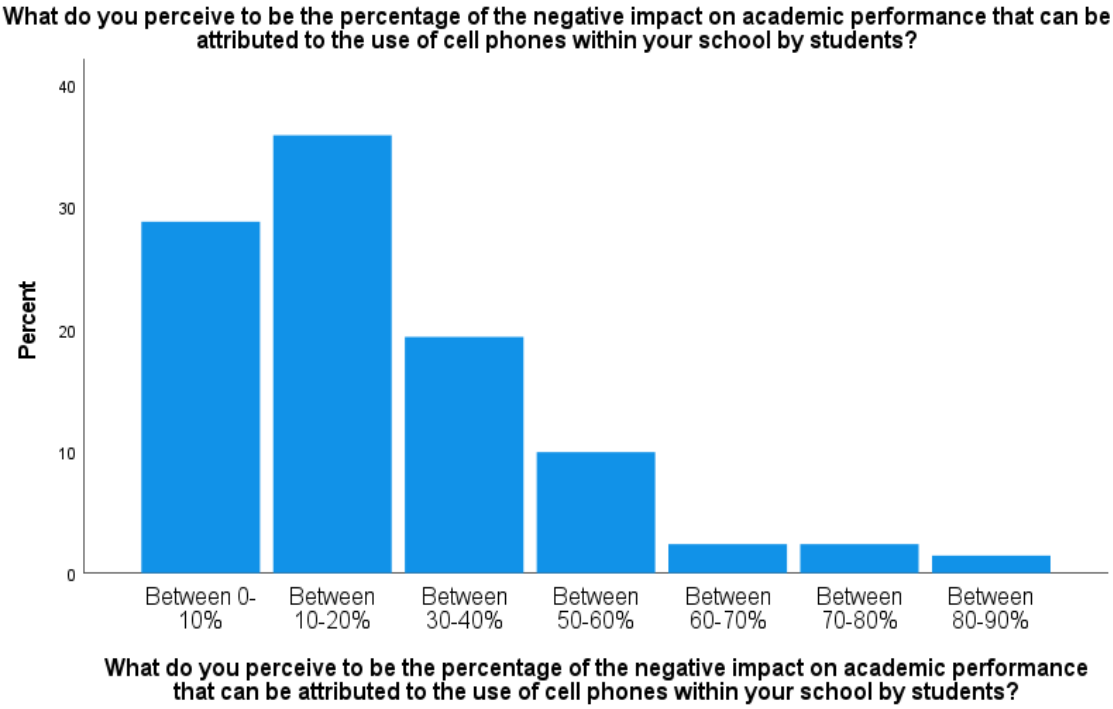

Do you administer progressive disciple consequences for cyberbullying with a cell phone?
Percent
100
80
60
40
20
0
No
Yes
Do you administer progressive disciple consequences for cyberbullying with a cell phone?

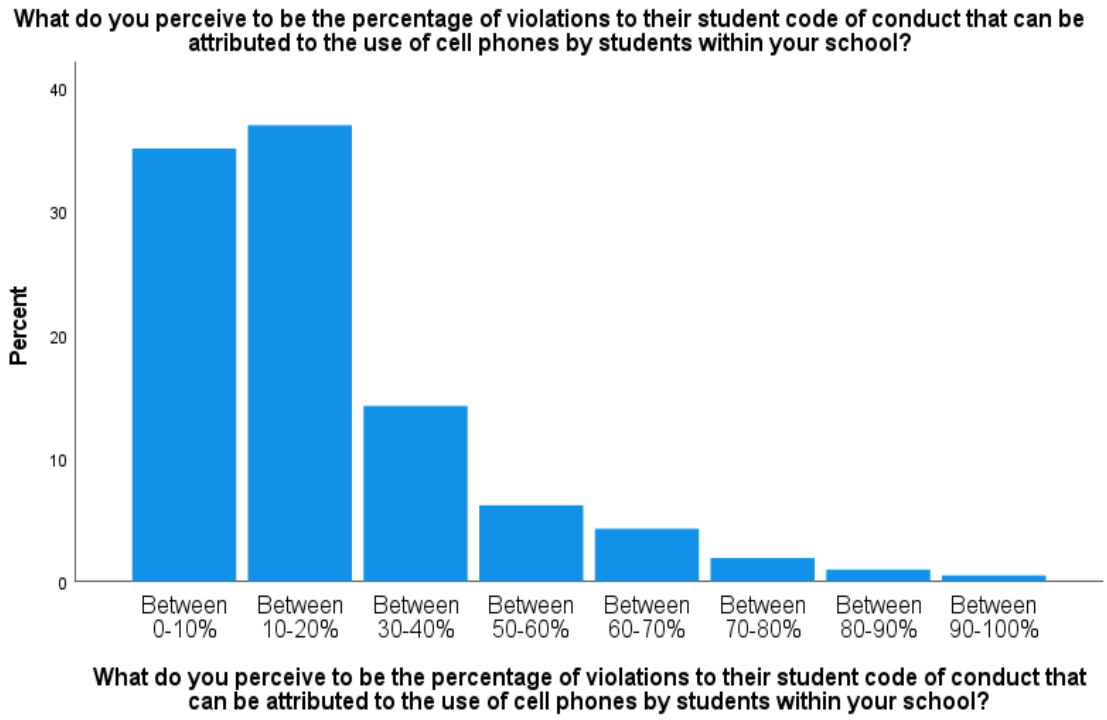

Do you administer progressive disciple consequences for using a cell phone involved in academic dishonesty (cheating)?
Percent
100
80
60
40
20
0
No
Yes
Do you administer progressive disciple consequences for using a cell phone involved in academic dishonesty (cheating)?


Do you administer progressive disciple consequences for using a cell phone that results in other violations of the student code of conduct?
Percent
100
80
60
40
20
0
No
Yes
Do you administer progressive disciple consequences for using a cell phone that results in other violations of the student code of conduct?

APPENDIX H

BAR CHARTS FOR RELATIONSHIP BETWEEN STUDENT CELL PHONE USE ON ACADEMIC PERFORMANCE, VIOLATIONS TO THE STUDENT CODE OF CONDUCT, AND THE NUMBER OF CONSEQUENCES ADMINISTERED TO STUDENTS (RESEARCH QUESTION 5)




What do you perceive to be the percentage of violations to their student code of conduct that can be attributed to the use of cell phones by students within your school?
Percent
40
30
20
10
0
Between 0-10%
Between 10-20%
Between 30-40%
Between 50-60%
Between 60-70%
Between 70-80%
Between 80-90%
Between 90-100%
What do you perceive to be the percentage of violations to their student code of conduct that can be attributed to the use of cell phones by students within your school?

APPENDIX I

CODES ASSOCIATED WITH THEMATIC CATEGORIES

Table 15

Frequency of Codes for Positive use of the Cell Phone (Theme 1: Student Cell Phone Usage Can Be Positive in Educational Settings)

Codes	*n*
Positive use of cell phone	181
21st century skills	1
accept technology	1
access to online education	2
adjust according to environment	1
appropriate use enhance education	10
banning won't help	2
can be used as useful	2
can be used in controlled environment	2
can be used in learning	1
can use after permission	1
can use in other purposes	1
can use instructional activities	1
cell phone to teach responsibility	4
cell phones are equivalent to chromebook	1
cell phones are quick	2
cell phones are reality of society	9
changed cell phone usage	1
chromebook to students	3
comfortable with phones	1
connect with google	2
connecting for academic have positive impact	1
consistent expectations from class	2
COVID increased cell phone issue	1
difficult to enforce no phone policy	1
effective use of cell phone	1
engaged in impact of social media	1
Enhancement of Instruction	1
established protocols for classroom	1
express permission to use phone	1
guidelines to enforce	1

had minimal issues	1
had positive effect	1
have chromebooks	1
help students to engaged	1
high schools are allowed to use	1
in pandemic use phones	1
increase academic learning	1
ipads are appropriate for educational outcomes	1
ipads don't allow on social media	1
kids use phone as device	1
let them use	1
live in connected world	1
looking at policy	2
majority use cell phones	1
many ways to list	1
middle school can keep in locker	2
need to embrace technology	2
no cyber bullying issues	1
no issue related to phone	1
not an issue in school	1
opportunity for learning	1
our job to provide educational experiences	1
parameter to use them	1
permitted to participate in kahoot	1
phones are vital in incidents	1
positive use in academic	1
possible to enhance instruction	5
possible with proper guidance	1
powerful tool if monitored	1
prohibited social media and pictures	1
proper use in school	1
require time and planning	1
same rules for all classes	2
shouldn't fight for use of cell phones	1
stay away from technology	1
student and staff must internalize	1
student and staff to incorporate properly	1
students can use critically	1
students come from poverty	1
student's projects	1
students will have laptop	1

study aids	1
support learning in many ways	1
taken advantage in classroom	1
teach how to find information	1
teacher also use phone	1
teacher can allow phone	1
teachers use kahoot for class	1
technology should be age appropriate	1
tools on phone provide assistance	1
use cell phone in educational purposes	1
use chromebooks in classroom	2
use for social media	1
use in absence of chromebook	1
use of personal device in professional setting	1
use of phone is allowed	1
use of technology is important	1
use phone as usual	1
use phones for educational purposes	1
used as an incentive	1
used in research	1
verification of answers	1
will discuss issue of cell phone	1
will use in future career	1
yes	49

APPENDIX J.

WORD FREQUENCY ANALYSIS

Table 16

Frequency of Codes for Training to Use Phone Appropriately (Theme 1: Student Cell Phone Usage Can Be Positive in Educational Settings)

Codes	*n*
Training to use phone appropriately	16
appropriate and inappropriate use	3
consistent policies are critical	1
depends on teachers, class	1
little guidance at home	1
need careful monitoring	6
need training of teachers	1
responsibility to make students responsible	1
right and wrong of cellphones	1
steps to minimize to be in social media	1

Table 17

Frequency of Codes for Used as Education Enhancement (Theme 1: Student Cell Phone Usage Can Be Positive in Educational Settings)

Codes	*n*
Used as educational enhancement	65
access their electronic gradebooks	1
access to relevant instructions	1
allow cell phone to do surveys	1
answering question with help of app	1
applications	3
assignments	1
calculator app	1
can use phone as computer	1
communication	4
complete assignments	1

email communication	1
formative assessment	2
gather submit information	1
gathering of information	1
get good grades in homework	1
goguardian will be helpful	1
grade checks and missing assignment	1
grades quickly	1
great resources for assessment	1
great resources for feedback	1
have sufficient technology	1
helpful in online formative assessment	2
if used for research	1
immediate feedback	2
instant feedback	1
integrate lessons into phones	1
material possible through phone	1
phone can capture image of notes	1
polling	1
powerful tools	2
QR code scavenger hunt	2
QR code to scan access material	1
quick access to information	6
quick assessment in classroom	1
record dates	1
recording lectures	1
reminders	1
replaced dictionaries calculators at best	1
research	4
retrieve information	1
schools' computers helped in integration	1
search engine to enhance learning	1
take notes	1
use for surveys	1
use in reference during presentation	1
use of calendar	1
utilize in numerous activities	1

Table 18

Frequency of Codes for Bullying and Privacy Concerns (Theme 2: Student Cell Phone Usage in Educational Settings can be Negative)

Codes	*n*
Bullying and privacy concerns	53
can be used in bullying	1
can engage in emotional unsafe environment	1
can't control student	2
can't say can't use without violating rights	1
caused more harm than good	5
cell phone related to bullying	1
cell phones have created problems	1
culture of missing out	1
cyber bullying is issue	3
discipline to stop bullying	1
effectiveness drop because of social media	1
harmful environment for students	1
inappropriate use of social media	1
liabilities to protect student privacy	1
personal devices difficult to prevent	1
phone to be in lockers	2
rely on school provided devices	5
restrictive use of personal cell phones	1
right and wrong of social media	1
shouldn't allow personal devices	1
situations follows students at home	2
slippery slope	2
social and emotional problems	1
social media increased conflict	1
social media will hinder usefulness	1
students behavior is unmonitored	1
students have device	8
students misused phones	2
use of phone is problem	1
want them to write information	1
will not use responsibly	1

Table 19

Frequency of Codes for Learning-Related Issues (Theme 2: Student Cell Phone Usage in Educational Settings can be Negative)

Codes	*n*
Learning related issues	115
advantage not outweigh problems	1
against to use in school	1
allow cell phone during lunch	3
are addicted to cell phone	1
away from cell phones	1
become hindrance in education	1
can be distracted	15
can't enhance instructions	2
can't enhance outcomes	2
can't run meaningful program on cell	1
can't separate for educational purposes	1
cell phone are hindrance	1
cell phone are not allowed	1
certain age to use phone	1
cheating is issue	1
computers can enhance outcomes	1
conditional use of cellphones	3
could be useful in absence of devices	1
depends on teacher effectiveness	1
difficult to monitor	6
distraction outweigh benefit	1
don't have updated phones	1
don't need cell phone	1
educational enhancement without phone	1
extremely difficult	1
fail in class test	1
if no device is available	1
implemented no cell phone	1
in 1 to 1 no use of cell phone	1
lack of guidance affect school	1
lack of keyboard limit learning	1
limit cell phones in lunch	1
need structure	2

need to teach students	14
negative impact on learning	1
negative impact on teaching	1
never learn to use in professional environment	1
no	8
no cell phone improved discipline	1
no need of cell phones	5
not allowed to use in class	2
not appropriate in academic setting	1
not at junior level	1
not helpful if in 1 to 1	1
not necessary	1
only use when permitted	1
other device provide better option	1
personal device are distracted	1
research proves worth of pencil paper	1
school approve technology give same result	1
school provide chromebooks	4
should compare past issues with cell phone issues	1
should teach cellphone to learn	1
student can get off task	1
students can't afford phone feel lonely	1
teach behavior that don't want	1
teacher should be consistent	1
teachers can't monitor students	1
tools suited on chromebooks	1
under guidelines and supervision	1
will use for video making	1

APPENDIX J

WORD FREQUENCY ANALYSIS

Table 20

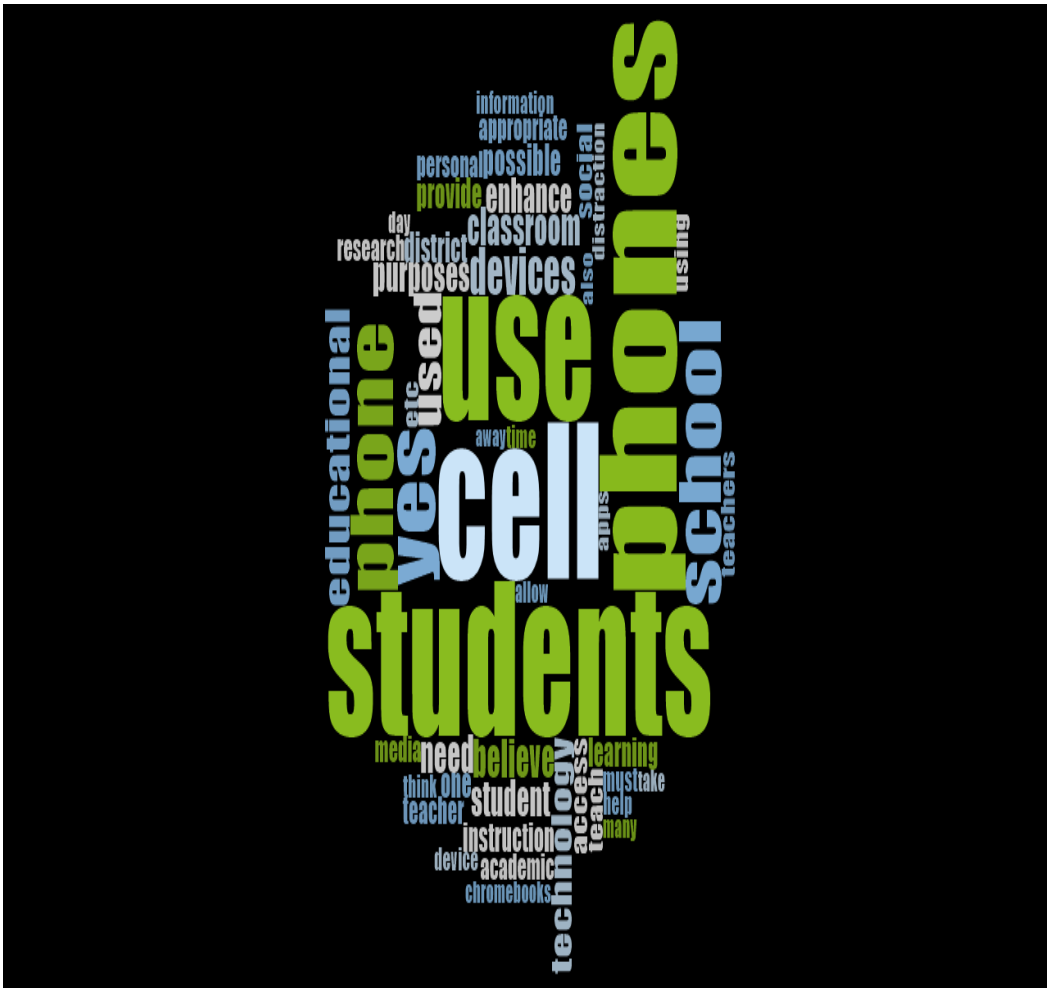
Frequency of the Most Frequently Occurring Words in the Data

Word	Count	Weighted Percentage (%)
cell	102	3.87
students	101	3.83
use	98	3.71
phones	95	3.60
yes	53	2.01
phone	50	1.90
school	49	1.86
used	30	1.14
devices	27	1.02
educational	26	0.99
believe	21	0.80
technology	21	0.80
classroom	20	0.76
need	20	0.76
purposes	19	0.72
student	19	0.72
enhance	18	0.68
possible	16	0.61
access	15	0.57
district	15	0.57
provide	15	0.57
instruction	14	0.53
learning	14	0.53
one	14	0.53
social	14	0.53
etc	13	0.49
teach	13	0.49
teacher	13	0.49
academic	12	0.45
appropriate	12	0.45
media	12	0.45
personal	12	0.45

research	12	0.45
teachers	12	0.45
using	12	0.45
must	11	0.42
also	10	0.38
apps	10	0.38
device	10	0.38
distraction	10	0.38
help	10	0.38
information	10	0.38
think	10	0.38
time	10	0.38
allow	9	0.34
chromebooks	9	0.34
day	9	0.34
many	9	0.34
take	9	0.34
away	8	0.30

APPENDIX K

WORD CLOUD



APPENDIX L

Internal Review Board Approval

May 27, 2021 11:14:05 AM EDT

Jane Beese
Teacher Ed and Leadership St

Re: Exempt - Initial - 2021-102 Ohio High School and Middle School Principals (Grades 6-12) Perceptions and Procedures on Student Cell Phone Use within their Schools

Dear Dr. Jane Beese:

Youngstown State University Human Subjects Review Board has rendered the decision below for Ohio High School and Middle School Principals (Grades 6-12) Perceptions and Procedures on Student Cell Phone Use within their Schools.

Decision: Exempt

Selected Category: Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

Any changes in your research activity should be promptly reported to the Institutional Review Board and may not be initiated without IRB approval except where necessary to eliminate hazard to human subjects. Any unanticipated problems involving risks to subjects should also be promptly
reported to the IRB.

The IRB would like to extend its best wishes to you in the conduct of this study.