TEACHER PERCEPTIONS AND IMPLEMENTATION OF DIGITAL CITIZENSHIP CURRICULUM IN ONE-TO-ONE HIGH SCHOOLS IN MISSOURI

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TEACHER PERCEPTIONS AND IMPLEMENTATION OF DIGITAL CITIZENSHIP CURRICULUM IN ONE-TO-ONE HIGH SCHOOLS IN MISSOURI

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By

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ABSTRACT

This quantitative study surveyed teachers in high schools with a one-to-one technology program to determine their perceptions on the nine tenets of digital citizenship and the frequency with which they were addressed in their schools. Teachers expressed that all nine tenets were important. However, teachers stated the tenets were only taught somewhat frequently to somewhat infrequently. Demographic variables were also analyzed to determine if there were differences in belief based on age, gender, or grade level taught. In all of these factors, the only significant difference was between males and females in digital communication and digital etiquette. The research showed only a small number of teachers indicated their school had a formal, digital citizenship curriculum. The recommendation from this research was that schools should develop a formal digital citizenship curriculum to purposely increase the frequency of its instruction.

CHAPTER ONE

INTRODUCTION

Upon first hearing the term *digital citizenship*, an educator may remember the early calls for cyber safety in schools. Levy (2011) described this as a call to keep students safe from online predators seeking to find a way to spirit off naïve children. Levy displayed regret that such emphasis was placed on a relatively low probability threat as opposed to educating students on the myriad of competencies that would allow them to be good citizens of the World Wide Web. Hollandsworth, Dowdy, and Donovan (2011) noted many youths have access to the Internet before or by the age of 12 and have already developed online habits. These habits are likely due to the dependency on technology in many countries as it is becoming essential for entertainment, social, and professional tasks (Isman & Ozlem, 2014). There is a need for schools, parents, and the rest of the community to take action and provide instruction in appropriate digital citizenship before bad habits are formed (Hollandsworth et al., 2011; Ribble, 2008).

Digital Citizenship Problems

One of the foremost voices for digital citizenship, Mike Ribble (2011), noted a change observed in schools since 2007 is that it has not been effective to simply restrict student use of inappropriate technology because restriction does not equip students with the necessary skills to navigate a complex, technological world. Ribble addressed the concept that many schools will put acceptable use policies for technology in place governing how technology is to be used, but never address the root issues of basic morality and responsibility. Students are left to cope with a world where they are not allowed to use technology during school hours, but then they are connected as soon as the bell rings. Additionally, when students are connected, they have the whole digital world at their fingertips and no compass to guide them appropriately. Metz (2011) questioned if schools are truly meeting the universal mission statement of preparing students for the world after graduation if we do not address issues pertinent to the 21st-century. This reinforces the declaration by Ribble (2011) that the problem goes beyond the school walls, to parents, the law, and businesses.

The moral nature of digital citizenship must include educators, parents, and community members providing support as well as consistency of content when addressing digital citizenship (Ribble, 2008). Law enforcement may get involved as students make poor choices in their use of technology, leading to prosecutable offenses. Ribble (2011) pointed out one problem with the Internet initially was pornography, which has grown to include students' personal pornographic images carried with them on their phones and sometimes distributed to others. Youth struggle to truly grasp the concept that sexting is equivalent to distribution of child pornography, in certain circumstances earning one the label of sex offender the rest of his or her life. Another problem noted by the Federal Trade Commission (n.d.) is the financial danger due to identity theft when someone with ill intent gains personal information. This can impact the financial state of individuals and their families as time and money is lost to criminals who used the information for material gain at the expense of the victim.

With the scope and severity of digital citizenship issues, it is almost surprising to see that schools have not already been required by governing agencies to address this issue in similar ways as obesity and bullying due to its impact on the educational environment. Schools must step up to teach digital citizenship and teach it effectively to better themselves and society as a whole. For this reason, it is important to know what is being done in schools and how effective it is perceived to be.

Theoretical Framework

As the general concept of morality is considered, Kohlberg's theory of moral development provides beneficial insight into the process by which people, and children in particular, develop morality in a fairly sequential process as they age (Kohlberg, 1973). Lawrence Kohlberg created a theory of moral development in the early 1960s, building on Piaget's work with student cognition, and Kohlberg continued development throughout the end of the 20th century (Cam, Seydoogullari, Cavdar, & Cok, 2012; Dubas, Dubas, & Mehta, 2014; Hoy, 2010; Nather, 2013). One specific aspect of Kohlberg's (1973) research looked at the tie between cognition and behavior and feelings with regard to morality. Kohlberg also drew a contrast between moral development based on external factors versus internal processes. It is this very distinction that made Kohlberg's work foundational for the study of digital citizenship. Kohlberg amplified the aspect of choice based on moral development more so than simply decisions based on experience and cultural norms. Digital citizenship involves new technologies birthed daily; therefore, individuals must have inherent moral reasoning to address new situations rather than to simply follow taught moral parameters.

Kohlberg's theory has been largely influential over the years in examining moral reasoning, although that has not been without some challenges (Bell & Liu, 2015; Cam et al., 2012; Koh, 2012). Despite these challenges, Kohlberg's basic premises still hold strong ties to education (Hoy, 2010). Therefore, his work provided the theoretical framework upon which to build the current research.

Morality, especially as it pertains to society, has been studied at length and found to have rational roots in addition to those facets related to systems of beliefs and rules. There is a benefit to a society with a sense of morality and ethics that provides an overall greater level of societal satisfaction, safety, and economic benefit through a more universal presence of trust and respect (Dubas et al., 2014). Typically, the culture, norms, and acceptable behavior are able to be sustained when determined by the masses rather than a select few (Bell & Liu, 2015). Thus, cultural norms, morality, and ethics provide stability and structure to a society when the group as a whole accepts them.

Kohlberg's theory examined the rational, reasoning approach taken to look at moral issues and classified the responses (Hoy, 2010). An example given by Kohlberg (1973) was the scenario where a woman was dying of a unique illness. Her husband had discovered a local pharmacist was selling the cure, but for more money than the man could afford. Despite his best efforts, the woman's husband could not raise enough money to purchase the drug nor could he convince the pharmacist to work out some kind of deal. He finally considered stealing the drug to save his wife. What should he do?

Based on responses to questions like this scenario and others, Kohlberg (1973) developed a theory based on nearly 20 years of research. He developed levels and stages within which the answers could be grouped. These levels and stages are displayed and described as three levels, each containing two stages as shown below:

Level 1: Preconventional Morality

Stage 1: Punishment-obedience. Unquestioning obedience. Children think that powerful authorities hand down rules that must be obeyed without question to avoid punishment. If a child is punished by an adult then the child's act was wrong.

Stage 2: Individualism and exchange. Relativistic outlook; pre-school children recognize that individuals have different viewpoints and each individual is free to pursue his/her own interests. Punishment is a risk of wrong decisions if caught; individuals seek "fair exchanges" in dealings. Focused primarily on individual benefits and not concerned about the community or society.

Level 2: Conventional Morality

Stage 3: Good interpersonal relationships. Concern for good motives. Most children move on to this stage during elementary school and develop a sense of family and community. They learn to display love, empathy, trust, and concern for others.

Stage 4: Law and order. Individuals in their early teens become concerned about the society and they want to maintain law and order; their behavior is similar to those at Stage 1. Most people stay at this stage for most of their lives.

Level 3: Postconventional Morality

Stage 5: Social contract. People at this stage perceive a society as a social contract into which people enter to benefit all. They want people to have basic rights and democratic procedures for making laws and to improve the society. This stage becomes possible after puberty (age 16) but most people stay at Stage 4.

> Stage 6: Universal ethical principles. Individuals at this stage conceive of universal principles of justice and individual rights. (Dubas et al., 2014, p. 22)

As can be observed by this description, people typically begin their reasoning at the lowest level and progress through the stages as they age. A stage that is higher than another is seen to be more moral and therefore a more desirable worldview. An individual would aspire to reach the highest level he can grasp intellectually (Kohlberg, 1973). Some of the criticism around Kohlberg's theory comes from its simplicity. Research with younger students in high school and early college displayed higher levels of reasoning. Respondents' reasoning was observed to be complex and in need of greater distinction to be accurately described (Kaplan & Tivnan, 2014). This research did not displace Kohlberg's (1973) theory of moral development, but simply called for greater divisions and questioned at what point higher order reasoning was observed.

Despite the many challenges to Kohlberg's theory of moral development, there is no other landmark theory on the topic of moral development and it does not look likely one will be developed soon as multiple researchers have supported its basic tenets (Koh, 2012; Walker, 1982). The theory is based on development through life experiences, which take place at school and home. Obvious, but worth noting, is that when formal moral education is not part of students' schooling, it is often assumed to take place at home (Koh, 2012). However, one problem is students are growing up in a world so unlike that of their parents' childhood that their parents will only provide digital citizenship education if they make conscious effort to do so (Ohler, 2011). This is unfortunate since life experiences can be taught through manufactured scenarios (Koh, 2014). Therefore, schools must take advantage of the growing moral reasoning skills of students to guide them in good decision making.

Kohlberg's (1973) theory has strong bearing on the concept of digital citizenship education, as students will be going through various stages of development all the while being digitally connected. Students growing up with this technology may view it as standard. The call for educators is to help students step back from their everyday use of technology and focus on technology's impact on their lives (Ohler, 2010). As students progress through life stages of technology usage they will have to constantly reestablish their moral bearing in regard to technology's impact on their life.

Problem Statement

As the following research indicates, digital citizenship has strong ties to morality. For example, Hoy (2010) showed that Kohlberg's theory of moral development links to education as moral development and cognitive development appear to be related. It is common sense that a student receiving no math instruction would not be able to learn calculus. Similarly, digital citizenship is a skill that must be honed and developed to help students move from purely egocentric thinking to judgments based on more abstract concepts of morality.

The danger in ignoring digital citizenship in schools is the Internet left alone does not filter itself. Gozálvez (2011) cautioned the only true Internet filter is the one the end user imposes to meet his or her desires. Worse than not having a filter, Internet advertising software actually sends information and media to the user similar to what has frequently been accessed. Gozálvez encouraged education to combat "digital inbreeding" (p. 134), recognizing the opportunity for schools to direct human development. If this so-called digital inbreeding is material that would be deemed immoral or illegal, at what point will students learn appropriate behavior?

Unfortunately, when schools focus on technology, the focus is often on additional hardware to provide students access. However, Felt, Vartabedian, Literat, and Mehta (2012) cautioned against making technology the end result. When a group of preservice teachers in Canada utilized technology for classroom instruction, they began to recognize moral and ethical issues that technology in the classroom brings (Moll & Krug, 2008). They quickly recognized technology usage could range from benevolent to malevolent. Even realizing the dangers in technology, some teachers hide behind district policy for acceptable use of technology, dodging education on topics that may be uncomfortable due to the topic or grade level (Ribble, 2012). Ribble (2008) stated teachers rarely examine their own personal usage to become better digital citizens themselves, much less teach digital citizenship well. If teachers do teach digital citizenship, there may be confusion as to what digital citizenship entails and teachers' perceptions of what aspects are worth teaching. Teachers may feel they are either encroaching on students' personal beliefs or teaching something so extrinsic as to be ineffective in the long run. Teachers must have a belief that instruction regarding morality issues like digital citizenship is beneficial (Burns & Burns, 2011).

The inherent danger in ignoring or hiding from education on digital citizenship is students having dual lives where they are truly connected outside of school and limited in their abilities in school. Ohler (2011) compared it to sex education where you can prohibit the behavior, but doing so simply creates a rule-based system rather than an individual understanding the responsibilities of the health issue. Similarly, to create technology users who are good digital citizens when under the school firewall and filter as well as in their bedroom where the user is the only filter, schools must address digital citizenship issues in a proactive, educational manner to help students make appropriate decisions (Gozálvez, 2011; Hollandsworth et al., 2011).

Ohler (2010) best recognized the problems addressed in the current study as he wrote about how technology is largely overlooked in society due to its pervasive nature. He declared this to be an even greater problem for current students who have grown up utilizing technology their whole lives. Ohler went on to state that genuine digital citizens are able to focus on technology, thereby addressing and reflecting on its influence on their lives and society as a whole. He stated this ability to focus is a diminishing societal talent. There is a need for research to examine the area of digital citizenship perceptions and practice to determine if it is truly an overlooked area. The purpose of this study, therefore, was to determine what teachers perceived regarding digital citizenship and what components of digital citizenship education were actually being implemented in one-to-one high schools in Missouri. If the results of this study support the statement that digital citizenship is not formally taught in schools where there is one device for every student, then there would be further need to examine what impact this has on schools or even determine what can be done to change this cultural problem.

The choice to examine one-to-one high schools was made specifically for the benefit of determining what teachers in the trenches of technology usage deemed necessary. This study can help provide greater insight into what areas of digital citizenship teachers deem as important based on whether it is taught or not. In this study, teachers self-assessed their digital citizenship philosophies and actions in teaching and essentially showed if their practice aligned to their core beliefs. If practices do not align with teacher perceptions then the statement posited by Ohler (2010) that technology and its responsible use is only truly recognized at times when it inconveniences people's lives is supported.

Rationale for the Study and/or Purpose for the Study

The International Society for Technology in Education (ISTE, 2008, 2009) described five standards by which administrators and teachers should implement technology in education. The fifth standard for administrators and the fourth standard for teachers are focused on digital citizenship. Richardson, Bathon, Flora, and Lewis (2012) conducted a comprehensive review of the literature over the National Educational Technology Standards for Administrators (NETS•A) which has been renamed and revamped as the International Society for Technology in Education Standards for Administrators (ISTE•A). Richardson et al. found "Standard 4: Systemic Improvement and Standard 5: Digital Citizenship lack extensive research compared to the first three standards" (p. 144). Suppo (2013) found in his research with Pennsylvania public school leaders a "significant negative correlation between leaders' digital citizenship beliefs and the frequency digital citizenship is addressed within schools" (p. 86). The lack of action by many school leaders following their self-proclaimed, recognized need for digital citizenship education is disturbing.

According to Schubert and Wurf (2014), schools, and teachers in particular, are facing tumultuous digital times. Student use of technology, as prompted by educators, creates opportunities for creativity and innovation in the educational context as well as opportunity for misuse. In an effort to combat this problem, Suppo (2013) found many districts were implementing a digital citizenship curriculum of some kind. This study sought to further the research on digital citizenship education by examining teachers' perceptions and any relationship they may have had with the implementation of digital citizenship education in schools. By focusing on one-to-one school districts, the study provides information from schools where technology was prevalent in students' educational as well as recreational lives.

Research Questions

The purpose of this study was to determine what aspects of digital citizenship teachers in one-to-one schools in Missouri perceived were important. The study also ascertained what components were addressed in their classroom. This study used the following questions:

1. What elements of digital citizenship do teachers in a one-to-one school environment perceive to be important?
2. What elements of digital citizenship do teachers in a one-to-one school environment address in their school?
3. What role does age, gender, or grade level taught have in impacting teachers' perceptions regarding digital citizenship?

Limitations/Delimitations/Assumptions

It is important to note variables that may have impacted the results of this paper. Every effort was taken to minimize these variables.

Limitations. The following were limitations of the study.

1. Some schools may have been implementing a formal digital citizenship curriculum with different terminology, resulting in inaccurate reporting of

practices. Multiple questions over concepts were intended to reduce this impact.

2. The frequency of addressing digital citizenship was based on the respondent's opinion.
3. Implementation could have been affected by multiple factors outside of a teacher's control such as budget constraints or imposed time constraints on material taught.

Delimitations. The following were delimitations of the study.

1. This study focused on high schools in the state of Missouri identified as having implemented a one-to-one initiative as defined later in this paper.
2. Response information was limited to the current school year when the survey was given.

Assumptions

1. It was assumed respondents answered truthfully.

Design Controls

This quantitative research used a survey to collect data regarding teachers' perceptions of digital citizenship and the frequency with which the nine components were addressed. The survey was designed with teachers answering four items over each of the nine elements of digital citizenship as identified by Mike Ribble (2011) to help minimize the impact terminology confusion would have on the results. This helped with validity as teachers could have misunderstood an item over a tenet, but still have three other items over that tenet that should have displayed their true perceptions. With regard to the frequency of addressing the nine elements, this was left up to teachers' discretion due in part to the fact that some teachers may have formally provided explicit instruction regarding a certain element while other teachers integrated digital citizenship into their everyday class instruction. Issues such as budgetary or time constraints were further reduced with daily integration if teachers chose to implement digital citizenship education in that manner.

Definition of Key Terms

One-to-one technology program. This is "defined as any school where each student has an Internet-connected, wireless computing device for use in the classroom 24 hours a day, seven days a week" (Tackett, 2014, p. 8).

Summary

Digital citizenship is a concept Suppo (2013) found to be important to many school leaders whether they implemented formal curricula in their district or not. This research sought to assess if digital citizenship was likewise important to teachers and if their perceptions were displayed in the implementation of digital citizenship implementation. It was the intent of this research to expand the field of knowledge regarding digital citizenship education to better understand teachers' perceptions and implementation. Kohlberg's (1973) theory of moral development provided a theoretical framework upon which to view this research. Kohlberg's theory aligned well with the instrument used in this study as the instrument examined teachers' perceptions regarding the nine elements of digital citizenship defined by Ribble (2011) and outlined later in this paper. By gathering demographic information on grade level, this research was also able to look for any differences regarding responses to the survey items that may be related to the different stage of their students. By focusing on one-to-one high schools in Missouri, districts that had already been entrenched in educational technology provided data the researcher hopes will help other districts navigate this jump. Limitations, delimitations, and assumptions were addressed. Stating the design controls provided a guideline to follow when reading through the remainder of the study. Finally, defining key terms allowed for common terminology when examining the study.

Chapter Two includes a review of the related literature, organized thematically, beginning with the nine elements of digital citizenships, the importance of teaching digital citizenship, and barriers to teaching digital citizenship. Chapter Three described the methodology used to conduct the study. In general, information was garnered via a survey adapted from previous research to conduct a quantitative study. The survey addressed the perception of teachers in a one-to-one school toward the nine elements of digital citizenship and the frequency with which they were addressed. Chapter Four presented the results of the survey and coinciding statistics. Chapter Five provided a discussion of the results with implications for education and considerations for future studies.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Mike Ribble (2011) stated in his book, *Digital Citizenship in Schools*, "[d]igital citizenship can be described as the norms of appropriate, responsible behavior with regard to technology use" (p. 10). In looking at the framework for 21st-century learning produced by Partnership for 21st-Century Learning (2015) and the ISTE Standards for Administrators (ISTE, 2009), digital citizenship is a part of the broader concept of 21st-century learning. Larson, Miller, and Ribble (2009) included digital citizenship as a point of emphasis for school leaders who desire to advance technology in their district. In light of that, parts of this paper will refer to the implementation of 21st-century skills to shed light on issues surrounding digital citizenship. In addition, Kohlberg's (1973) theory of moral development was the theoretical framework basis of this research. The literature surrounding digital citizenship examined in this paper focused on digital citizenship, the importance of teaching digital citizenship, and barriers to teaching digital citizenship.

The Nine Elements of Digital Citizenship

Ribble (2011) described nine basic tenets of digital citizenship: digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital law, digital rights and responsibilities, digital health and wellness, and digital security.

Digital access. Element 1 is digital access, which entails the provision of technology equitably within a school district (Ribble, 2011). More broadly, it is the ability to use a computer or utilize some computer program or network including the Internet (Banister & Reinhart, 2011). As schools work to implement learning aided by technology, digital access is vital to the success of a technological initiative. Providing access to technology and the Internet including Web-based services is viewed in this context as items or services that must be provided in order to promote digital citizenship.

In some countries, digital access has moved beyond the concept of good digital citizenship to being viewed as a right. Where there is a lack of access it has even been addressed by governments (Hargittai, 2010; Keeling, Macaulay, & McGoldrick, 2007). Historically, the lack of access to technology to disadvantaged groups has been called the digital divide. It is classified as a divide because wealthier families have the ability to gain access to technology both at home and at school, whereas disadvantaged groups have no or limited access to technology and the Internet (Banister & Reinhart, 2011; Eastin, Cicchirillo, & Mabry, 2015; Minor, 2016). When a digital divide exists in schools, increasing their technology integration, the academic gap between students of high and low socioeconomic status is further exacerbated. This leads to frustration among educators looking to overcome academic issues related to socioeconomic status (Braverman, 2016). Because of this, schools need to be aware of the financial constraints on some families inhibiting them from taking advantage of the vast array of technology. Schools can find ways to allow students fair use during the school day and provide creative options outside of the school day. The key factor is that technology cannot simply be provided and satisfy the demands of digital access. The technology must also be available for use by students inside and outside of school to increase student learning.

This awareness of digital access discrepancies can be expanded to ethnicity and gender as well. Access to educational technology is an opportunity to help breach cultural inequities. Digital access is not simply providing an equitable environment but an environment where all students regardless of their culture, socioeconomic status, and gender can attain the same level of achievement (Minor, 2016). The digital divide is no longer satisfied by access to the Internet only. Rather, it is having quality access and using it effectively (Eastin et al., 2015). A term for quality digital access is *techquity* (Braverman, 2016). Awareness of the digital divide and need for techquity is important to stress because students who are marginalized often have reduced interactions with utilizing technology in ways that transform their learning (Banister & Reinhart, 2011; Braverman, 2016; Minor, 2016). Access to technology for the purpose of social justice provides all students experiences that allow them to redefine their learning and impact their community in a positive way.

Another problem area for digital access is simply geography. One example is teenagers in rural California who not only suffered from a lack of high-speed Internet access, but also had little to no cellular reception. Many of these students were simply cut off from the Internet while at home (Harlan, 2014). Beyond home, access to broadband Internet is often hampered due to rural libraries falling short of their urban and suburban counterparts in technology as a whole (Real, Bertot, & Jaeger, 2014). In these areas, students' parents may suffer from a lack of digital access as well, meaning the household is Internet poor (Machado-Casas & Ruiz, 2012). Overcoming low population density is one piece of digital access to be tackled.

Overall, the lack of access to technology and or the lack of quality technology use is seen as preventing certain demographics from developing essential skills necessary for their future (Harlan, 2014; Minor, 2016), which may impact their earnings (Hargittai, 2010). Koivusilta, Lintonen, and Rimpelä (2007) showed students aspiring to higher education used computers more for educational pursuits. Jelfs and Richardson (2013) found in a survey of higher education students that computer availability was more or less prevalent across all ages. Therefore, increasing technology's use for educational or academic pursuits to help instill educational values typical of homes with a higher socioeconomic status more broadly is one possibility for growing digital access (Koivusilta et al., 2007). Overall, the goal of digital access is to create a social and moral cause to address such issues as the digital divide that create inequity in the world.

Digital commerce. Element 2 is digital commerce and is essentially online shopping and the need to use reputable sites when making purchases (Ribble, 2011). Examples of digital commerce sites are eBay and Amazon. Physical retail stores such as Walmart and Target also provide options for ordering online at Walmart.com and target.com, respectively. Stevens (2016) reported more shoppers purchased items online than in the store for the first time in the summer of 2016. Even if this research is not completely scientific, the growth in online purchasing makes the inclusion of digital commerce in digital citizenship vital.

Digital commerce, or e-commerce as it is often called, can occur between a business and consumer or consumer and consumer (K. Jones & Leonard, 2014). The trust issues can be different depending on the interaction taking place. Companies engaged in online business-to-consumer commerce typically gather consumer information for the purpose of more targeted marketing to increase sales. The trust issue inherent in this transaction is that the company from which the product is purchased is trustworthy enough to keep that information secure. Consumers can benefit from sharing this information as the advertisements directed toward them are closer to their actual interests. However, companies can also glean more information such as physical location and Internet browsing history following an online purchase, which may be more information provided than intended by the consumer. This is increasingly becoming an issue as mobile devices are used for purchases and has even merited government intervention to help protect consumers (Boritz & Won Gyun, 2011). The belief of goodwill on the part of both consumer and seller is a trend that will continue even for peer-to-peer interactions.

When the online transaction is consumer-to-consumer such as eBay or Amazon, the buyer in the interaction is perceived as most at risk while the seller can require upfront payment and other verification methods. Consumers will seek to determine the trustworthiness of the seller in as many ways as possible such as Web site validity and seller reviews. Consumers must perceive the Web site as being of quality with enough product information to make the consumer feel as informed as the seller. Additionally, third-party recognition such as other user reviews help the buyer feel more confident in making the purchase (K. Jones & Leonard, 2014). The purchaser wants to be confident the transaction will result in the desired end and is not fraudulent.

Most of the digital citizenship surrounding digital commerce revolves around the concept of trust. Questions of the trustworthiness of a site and confusion over the information shared with retailers and its subsequent use or distribution are concerns. Retailers are called to adopt a practice of approaching consumer information with a mindset to follow the intent of the consumer rather than vague privacy agreements (Martin, 2016). Doing so would display digital citizenship on a grand scale as companies show a willingness to look out for the interest of the consumer over their own. This concept relates directly to a classroom as teachers work to instill in their students the basic tenets of trust and goodwill toward others. The new facet addressed here is the need to extend this goodwill even when you cannot see the other person. Additionally, digital citizenship addresses the concern that an inherent trust is placed in an online retailer when making a purchase the same as trusting an online source to be credible enough to include in an academic paper.

Digital communication. Element 3 is digital communication including cell phones, instant messaging, video calling, and other such communications (Ribble, 2011). There is a proliferation of communication that occurs, especially with young adults and adolescents, in digital forms on mobile devices (Buckley, 2014; MacLean, Geier, Henry, & Wilson, 2014). This was important to note because the devices by which much of the communication occurs are personal, portable, and often available to them. There is a complexity to having so many communications occurring through various venues or even simultaneously (Buckley, 2014). Even within a controlled classroom, students must sometimes contend with their school-provided device, personal mobile device, and whatever technology the teacher is using for instruction.

Of these communications, one particular point of study for many researchers is social media. Len-Ríos, Hughes, McKee, and Young (2016) surveyed early adolescents around 13-years-old and determined these students use social media almost twice as many hours per day as compared to e-mail. However, these children reported their main use of social media was to consume information rather than post information. Livingstone (2014) found many school-age children start out as consumers of information and then move toward creators even if it is in reaction to some event as opposed to original material. Children communicate for social purposes, often through group texts and sites like Facebook. This communication ranges from simply trying to make friends to learning how to properly wade through the mass of people attempting to be their friend on social media.

As students are guided through this web of communication, however, they can eventually grow into powerful producers using their communication skills to reach their peers and the world. Engaging students in real-world activities and allowing them to share their findings produced a positive peer-to-peer learning environment utilizing digital communication. Students not only learned to communicate their findings, they also learned to positively critique and help their peers in their research (Buckley, 2014). This lends credence to the idea of the student as producer in the learning environment.

It is even more interesting to see how digital communication can move beyond providing simply a different form of communication to creating a way for people to communicate who would otherwise not have been able to do so. One example is found among individuals with disabilities that prevent them from carrying out normal, face-to-face communication. Disabled individuals were able to use digital technology and online social media to increase their ability to communicate with others, which reduced awkwardness typically experienced in face-to-face communication (Hynan, Murray, & Goldbart, 2014). In this way, digital communication is more than just a fad or something to be enjoyed, but a way to help people experience a richer life.

Recognizing the sheer volume of digital communication that takes place on a daily basis, schools must increasingly evaluate how to harness digital communication to positively impact learning and the school culture. Encouraging reflection on the amount and appropriateness of digital communication is a constant skill to be instilled in individuals (Ribble, 2011). Digital communication, like so many other skills, can easily fall into the trap of users blaming poor choices on upbringing or poor character rather than recognizing the need to teach appropriate use. By accepting this responsibility and teaching proper digital communication teachers can meet students where they are already skilled and guide them even further in their ability to communicate for constructive purposes.

Digital literacy. Element 4 is digital literacy, which is the concept of actually teaching what the technology is and how it can be used (Ribble, 2011). Teachers may overlook this aspect of digital citizenship believing students already know how to use technology. However, it should not be assumed students know how to use technology for academic purposes and do not need much instruction (Braverman, 2016; Hargittai, 2010; Harlan, 2014; Pfannenstiel, 2010). Rather, the concern is the exact opposite.

In line with that idea, Braverman (2016) and Hargittai (2010) argued that students need digital literacy education because they lack digital information skills. An examination of technology use provided insight into the need. For example, fourth and fifth graders performed more digital activities in school as opposed to at home (Heitin, 2016). As students age, however, their digital activity begins to change. An examination of college students' digital literacies showed competency related to those skills associated with personal use such as texting and social media while the carryover to academic competencies was not always strong (Pfannenstiel, 2010). This natural progression from a more formal, academic use of technology in the primary grades to more personal, social use as students age meant students were using technology more frequently (Livingstone, 2014). However, student use of technology still requires formal instruction or at least guidance in academic digital literacies to develop those particular skills. Unfortunately, some teachers do not teach aspects of digital literacy either due to a discomfort with or ignorance of the technology itself.

Sometimes teachers are unwilling to devote the time to digital literacy due to a hyper focus on preparation for high-stakes tests. Teachers in schools with students from a low socioeconomic status may often experience a push to raise test scores, which may lead them to focus on more traditional, targeted approaches rather than digital methodologies (Leu et al., 2015). If the issue is with testing, professional development is needed to show technology has the capability to individualize instruction in a way a single classroom teacher cannot physically manufacture (Braverman, 2016). As the classroom teacher learns to facilitate effective, individualized instruction through technology, students have shown an increase in academic achievement (Braverman, 2016; Machado-Casas & Ruiz, 2012). Another option is to elicit help or restructure existing times to obtain digital literacies. For example, librarians can be a resource to provide assistance with digital literacy skills (Harlan, 2014). Schools must work to ensure students have appropriate digital literacy skills and that teachers and structures are able to provide training when necessary.

One might question whether age impacts a learner’s digital literacy. Students enrolled in distance education courses are an excellent group to gauge whether digital literacy is vital to success. Jelfs and Richardson (2013) found older higher education students enrolled in distance education courses exhibited few discernible differences compared to younger students, under 30 years old in this case, who are often believed to be more tech savvy than older students. This was the case when some of the students were 70 years of age or older. The main difference observed by Jelfs and Richardson was that younger students tended to have a more positive attitude toward technology. The evidence of little difference in academic digital literacy belies the idea that age alone or growing up with technology increases academic competencies related to technology.

With the fast pace of changing technology and the recognition that attitude is important, digital literacy can encompass preparing students to learn new technologies as well as simply conveying an inherent ability. Not only do they need to learn new technologies, they must be able to use them with proficiency and agility to be successful in the ever-changing global market (Buckley, 2014; Nelson, Courier, & Joseph, 2011). Students need to be provided opportunities to create and explore with their technology in order to better understand the process rather than an application itself (Braverman, 2016). An example of this is student use of mobile devices for so many different tasks including writing, which may not be considered a plausible method by some educators (Ehret & Hollett, 2014). It is important to educate adults and parents as to the benefits of technology as well as to provide parents digital literacy education to allow technology to be fully utilized (Machado-Casas & Ruiz, 2012). Bridging digital literacy instruction with an explanation for why it is needed helps students and parents understand why time was devoted to learning a specific technology.

Digital literacy can be compared to a chef in a kitchen. In a kitchen, there are many tools. Some of the tools perform significantly different functions and require specific training. Some tools are highly related and therefore it is easy to transfer skills from one to another. Technology is the same with a need for specific instruction at times and the ability to explore at others. However, it cannot be assumed everyone, including the adults at home, has the same basic skills (Braverman, 2016). This skill cannot be overlooked as one is on the path to becoming a good digital citizen.

Digital etiquette. Element 5 is digital etiquette, where students learn how to behave appropriately when using technology. Digital etiquette is understanding the impact on others when using technology (Ribble, 2011). Just like good table manners are important when sitting at the table, using technology requires a degree of consideration for others so as to be polite and respectful.

Unfortunately, the proliferation of technology has created somewhat of a dual reality with one digital and the other physical. This disconnect between reality and virtual life can create difficult circumstances for some users as they display a lack of emotional maturity (Dangwal & Srivastava, 2016). Livingstone (2014) cited multiple conversations with adolescents where they treated others unkindly using social media. In some cases, the adolescents would reflect on the situation, noting its negative impact. In others, the children would laugh it off saying once they met in person everything was fine. Unfortunately, some relish in the power provided by bullying others using technology. Cyberbullying oftentimes provides immediate responses from the victim and possibly bystanders as well while providing the potential to bully anonymously so as to avoid taking responsibility. This is all the more reason for parents and educators to be knowledgeable and diligent in preventing this type of behavior (Wong-Lo, Bullock, & Gable, 2011). Digital citizens must recognize the impact of virtual life on real life.

Digital etiquette also extends to professionalism in the workplace. Communications between subordinates and higher authorities, such as students and professors, may not meet the expectations of recipients. For example, medical students' e-mails at a university in South Korea showed students' grammar and readability were at levels satisfactory of college students, however their general e-mail etiquette was a little over 60% of the desired level on things such as salutations, lack of Internet slang, and closing remarks, among others (Kim et al., 2016). The concept here is that these same students should not converse with patients and doctors in this manner when face-to-face and likely would not. However, education on appropriate e-mail etiquette would be beneficial. In another university, even a short 2-minute training session on e-mail etiquette during early undergraduate courses increased students' etiquette when communicating with their professors via e-mail (Aguilar-Roca, Williams, Warrior, & O'Dowd, 2009). While these small interventions were beneficial their purpose must be considered. The concern is that minor instruction on e-mail etiquette may not produce adequate skills in students (Oakley, Horvath, Weinberg, Bhatt, & Spallek, 2013). In these cases, it may be important to target the desired skills and make a focused effort to improve communication etiquette.

While these studies all relate to tertiary education where students may not see a professor on a daily basis, secondary education can learn from these examples. As technology becomes more prevalent and accessible in secondary education, the increase of instructional styles promoting increased digital communication will increase. Instructional formats like flipped learning, where students gain base knowledge outside of class and apply it in class, is one example (Schmidt & Ralph, 2016). This type of learning will require students to communicate with their instructor via e-mail if they experience difficulties or have questions. Proper digital etiquette will enable students to interact more respectfully and intelligently when this occurs.

Digital law. Element 6 is digital law focusing on the legal aspects of an individual's online behaviors. The main point of this element of digital citizenship is the ability to accept responsibility for one's online actions (Ribble, 2011). Examples of a breach of this element would be sexting or downloading media illegally from the Internet.

A digital law offense was exemplified at Cañon City High School in Colorado, where numerous students were taking, sending, and receiving nude photos of themselves and classmates, with many being minors. The consequences for these children ranged far beyond the classroom to possible felonies and registration as sex offenders (Martinez, 2015). Sexting has implications for both students and teachers. Cultural shifts along with technological access to sexually explicit images have created an environment that, when paired with increased educational technology, places greater risk on both groups. Students are liable for their inappropriate use of technology and teachers are liable for policing of acts of sexting (Schubert & Wurf, 2014). Sexting is just one example of digital law that also includes offenses like plagiarism, intellectual property theft, and illegal hacking of technology.

The issue of dual realities again becomes apparent in this arena where a physical act like stealing a candy bar from a gas station does not translate into illegally downloading a song from the Internet. Middle school-aged students acknowledge what they have done online, but do not recognize the possible negative impact of their actions because their intent was to entertain (Livingstone, 2014). When this occurs, they struggle to connect the actual emotional, social, or psychological impact with the virtual action.

One area commonly impacting educational settings is a form of cheating called plagiarism, where a student presents someone else's work as his or her own. In one online course, 92% of the students enrolled admitted they had personally cheated or knew someone who had (D. L. R. Jones, 2011). Students' capacity to cheat was even greater as they were prone to cheat in more sophisticated manners than just copying and pasting material. Some middle school students in the Midwest reported cheating using technology was commonplace in their view (Ma, Wan, & Lu, 2008). If cheating is occurring so frequently, it would be beneficial to look at possible justifications for this ethical violation.

Cheating and plagiarism fall under digital law as schools often have policies in place prohibiting cheating. Brent and Atkisson (2011) set out to examine reasons students defy these policies. One was the technique of neutralization formalized by Sykes and Matza (1957) where, in general, students view their actions in a victimized fashion with a greater focus on the external factors surrounding the deed rather than taking it as an opportunity to grow their moral reasoning and capacity. Specific to digital law, Brent and Atkisson found students sought to argue cheating was acceptable despite broadly held beliefs based on various reasons. Students also cheated because they felt out of control and no one was being hurt, or they had issues with the class or professor. Sometimes, students felt justified because an unfortunate accident required a quick fix, such as their dog eating their homework. A final area examined by Brent and Atkisson related to justification for cheating had an air of enlightenment as students felt the need to cheat to advance in the course. This type of cheating involves looking up answers in order to better understand the assignment for the future. Other studies have observed similar reasoning (Nedelcu & Ulrich, 2013). Cheating is apparently an issue that spans cultures and ages.

The concern here is that cheating is either seen as acceptable or is rationalized in such a way as to be personally perceived as acceptable (Brent & Atkisson, 2011; Nedelcu & Ulrich, 2013; Yamamoto & Ananou, 2015). There is hope in that the acceptance of cheating is true of undergraduate students who self-reported cheating, but not in those students who chose not to cheat (Stephens, Young, & Calabrese, 2007). This fear of cheating and plagiarism among students must be viewed in the proper context as plagiarism has been around for a long time (Howard & Davies, 2009). However, the amount of information available online as well as the ease with which it can be accessed and submitted as one's own work add components that are increasingly concerning to educators.

Educators must know enough of digital law to promote positive digital citizenship in students. Violators of digital law are truly breaking the law whether the consequence is a zero on an assignment or jail time. The character aspect of digital citizenship is important as research has shown people are quite able to justify their actions along the line of Kohlberg's reasoning where laws are viewed from a perspective different than simple right and wrong.

Digital rights and responsibilities. Element 7 is digital rights and responsibilities. This particular element is similar to the rights of an American citizen. There is a difference between what one can do and what one should do. There is a degree of responsibility for one's choices that must accompany the ability to act as one sees appropriate without constant supervision (Ribble, 2011). This is especially pertinent as students' use of technology is growing to a point they must be responsible for policing themselves (Hollandsworth et al., 2011). Adults cannot put up a fence against every possible danger nor is it beneficial to do so for the sake of learning (McRae, 2012). Simply removing online access when a child experiences harm or risk could lead children to communicate less with adults out of fear of loss of Internet privileges (Livingstone & Smith, 2014). Dangers exist online and the mentality should be appropriate prevention with strong doses of preparing students to make wise choices.

Children will take risks online. Risk-taking can be defined as behavior to obtain something an individual desires but which carries the possibility of harm (Geier & Luna, 2009). A look at parental monitoring of online activity found 9- to 11-year-olds are still trying to interpret social media and often welcome parental oversight in protecting them from its dangers. Eleven- to 13-year-olds reported parental oversight, mainly a list of things to avoid, with additional family or friends asked to snoop on their accounts. As the children grew older, those in early adolescence, middle school or junior high aged in the United States, actively tried to circumvent parental oversight. The oldest study participants, early high school age, tended to be less concerned with parental oversight, feeling they had matured to a point where their online information was more appropriate (Livingstone, 2014). One possible reason for this could be there is a belief at this age that inappropriate online behavior is likely to be discovered by parents (Gomes-Franco-Silvia & Sendín-Gutiérrez, 2014). Providing clear boundaries and accountability early with decreased accountability appears to be a common method for parents to develop in their children the concept of rights and responsibility. The goal is to move from an extrinsic system to an internalized code of conduct on the part of the student.

The fact that middle school-age children tended toward behaviors with more risk or inappropriate behavior on social networks is not surprising considering many of the interactions involved peer-to-peer interactions (Livingstone, 2014). With regard to peer interactions, as young adults received risk-encouraging communications from peers digitally, it increased their likelihood to engage in risky behavior. Additionally, the communication did not have to be prolonged or ongoing to have an impact but could simply be a short text message (MacLean et al., 2014). If this kind of impact from peer pressure is observed in young adults who already have some life experiences and greater moral reasoning according to Kohlberg (1973), who based his model on age, it is concerning to consider the influence of digital peer pressure on adolescents. As adolescents engage the Internet they will encounter additional digital peer pressure from many sides like advertisements and social media.

The question then becomes, is the student a beneficial or detrimental citizen of the digital world? Some students are developing a negative digital footprint where a Google search of their name could result in a job loss or college admissions rejection. The alternative is to build a positive identity, which is described as showcasing one's positive attributes. In the world of education, where technology use is growing at such a rapid pace, one's digital identity has as much impact as one's physical classroom presentation (Ainsa, 2016). Therefore, rather than simply decrying the dangers of the Internet and social media, teachers can help students develop a positive digital presence.

Students, like adults, want the freedom to choose in life. Adults must guide students in their decision making through a series of increasing freedoms that build responsible decision making. The goal is not to remove all dangers, but to prepare students to navigate those waters in such a way they benefit themselves and those around them.

Digital health and wellness. Element 8 is digital health and wellness, which explores the toll technology takes on individuals psychologically such as Internet addiction or physically, as in strain on wrists or eyes (Ribble, 2011). Many other aspects of digital citizenship are related to physical well-being such as the potential negative impact of cyberbullying. This particular tenet focuses on the true physical toll technology use has on a person.

Koivusilta et al. (2007) acknowledged that time spent online has frequently been associated with poor health. However, in their survey of 12- to 18-year-old children, this was not supported among the whole group. As the group was subdivided, older students who perceived themselves as healthy reported playing fewer video games. Overall, though, those who played games were actually healthier. Simple time spent online is not a significant factor of addictive Internet use. There are many other factors surrounding such an extreme use of the Internet specific to certain uses and behaviors (Pawlikowski, Nader, Burger, Stieger, & Brand, 2014). Some would argue online relationships are beneficial. However, there is little or even conflicting research with regard to interactions that take place online. There is known benefit to receiving social support when experiencing negative crises and online interactions can provide this (Lomanowska & Guitton, 2016). It will take time and further research to come to a conclusion on this matter.

The psychological danger begins to occur when pathological Internet use takes place. Pathological Internet use is an addiction similar to other addictions in that withdrawal or restriction from the Internet results in negative physical and psychological health impact (Chng, Li, Liau, & Khoo, 2015). Youth sometimes turn to online interactions as they work through times of social and personal awkwardness and adults may not even be aware (Gomes-Franco-Silvia & Sendín-Gutiérrez, 2014). In these cases, parents who recognize a problem exists with Internet addition can create healthy home situations by placing limits on Internet use to effectively reduce inappropriate Internet behaviors in adolescents (Chng et al., 2015). Youth may experience negative feelings at the thought of being without the Internet. This is especially true in homes where children feel their parents do not trust them and the parents are perceived as strict (Gomes-Franco-Silvia & Sendín-Gutiérrez, 2014). Like other addictions, the difficulty lies in that the solution to the problem causes additional stress. In cases where the youth has turned to the Internet for solace, there is additional trouble in compounding Internet withdrawal with the original problem.

Moving to physical health, one area affected is sleep. While no true correlation was found connecting sleep and technology, Johansson, Petrisko, and Chasens (2016) found that 97% of adolescents between 13 and 17 years of age used some form of technology within one hour of going to bed, with almost half of this population using multiple forms of technology. Those who reported poor or inadequate sleep and consequently greater daytime sleepiness used multiple devices to a significant degree (Gamble et al., 2014; Johansson et al., 2016; Lemola, Perkinson-Gloor, Brand, Dewald-Kaufmann, & Grob, 2014). In one study, Australian youth with more device usage were more likely to sleep in later on the weekends in an attempt to catch up on sleep (Gamble et al., 2014). Technology use has also been related to sleep problems with adolescents suffering from depression (Lemola et al., 2014). While these are not cause-and-effect studies, technology was shown here to be one more barrier to achieving appropriate amounts of sleep.

Even in looking simply at the area of sleep, the negative health impact of technology use is evident. Technology use close to bedtime, especially if it leads to a person postponing sleep, leads to a lack of sleep. Considering most of these studies involve adolescents who are still growing and developing, this is particularly concerning.

Digital security. Element 9 is digital security, which seeks to ensure individuals take the necessary safeguards to protect their personal information, whether it is financial or personal (Ribble, 2011). Financial information can be a credit card number or usernames and passwords for online banking. Another example of personal information is one's home address or even a simple picture posted online. Digital security often gets publicity due to the large reaching impact it can have. In late 2016, the tech company Yahoo announced two separate data breaches of its servers, with the first impacting roughly half a million people and the second impacting a million people (Pham, 2016). The data breaches mean people had usernames, passwords, and other personal information stolen. In instances like this, criminals compromised digital security by taking information without permission. The more deceptive data breaches occur when an individual actually gives the information to an ill-willed person.

In adolescents, sharing private information such as passwords can be seen as a show of intimacy and trust between two individuals whether it is a close friendship or more romantic in nature (Livingstone, 2014). Trust is sometimes misplaced, resulting in information shared beyond the scope of users' original intent or outside their circle of trust. A reason for this could be the difference between intimacy development online and offline. Face-to-face intimacy where both parties are physically present at the same place and time involves words or information and physical presence such as body language or touch. Online intimacy, while it can involve video or picture images, only has the capacity to truly share information. Therefore, online intimacy involves a faster and deeper foray into informational self-disclosure (Lomanowska & Guitton, 2016).

A point of encouragement is that risky online interactions for children and adolescents appear to be increasing at a lower rate than simple use of online technologies for those age groups (Livingstone & Smith, 2014). Many children are also becoming increasingly aware of the need for digital security and monitoring their digital footprint (Livingstone, 2014). This is a beneficial step in digital citizenship growth.

Digital security is another example of the online world directly impacting the physical world. Lack of security with information could lead to lost money or identity theft. In a worst-case scenario, it can lead to physical harm as people, particularly children and adolescents, provide enough information to predators looking for an easy target. People of all ages who are online must take steps to protect themselves and it is encouraging to see a trend that some have begun to do so.

Summary of the nine elements. Digital citizenship has been defined as having nine distinct tenets (Ribble, 2011). Each piece has different nuances to better understand what appropriate technological habits and behaviors are necessary to be a safe and considerate individual. However, the nine tenets may be discussed individually to provide each greater emphasis and clarity, but they are not distinctly independent components (Ribble, 2011). The nine tenets often overlap in a manner that pulls together the digital and physical world.

For example, one benefit of digital commerce is providing greater access of goods to individuals who would not otherwise be able to find the product (Keeling et al., 2007). This creates a circular need for providing digital access to allow for digital commerce. Digital literacy and digital access often go hand-in-hand as those who are more affluent with greater access often have increased comfort with technology (Braverman, 2016). Hynan et al. (2014) showed a need for both digital literacy and digital access to help provide individuals with disabilities the opportunity to engage in digital communication in new, effective ways.

Digital rights and responsibilities mesh with digital security as the call for retailers to develop information security procedures that display a willingness to do what is right by the consumer despite the legal ability to use information in a more devious manner for profit. Digital etiquette and digital security are also intertwined as privacy issues may arise from a person who initially places information online but then other users manipulate that information for selfish or cruel purposes (Livingstone, 2014). However, a paradox is created when it is this vulnerability of oneself online with a potential for exploitation that can help to garner support from others during times of emotional distress (Lomanowska & Guitton, 2016). There is a balance between trust and safety that must be constantly evaluated.

Digital citizenship seeks to address broad issues in a way that continues to maintain relevance even through changing times and technology. The components of digital citizenship focus on academics, school culture, student actions, and students' personal life (Ribble, 2011). Digital citizenship attempts to draw focus to those parts of the technological world constantly surrounding and impacting people but woefully attended to (Ohler, 2010). Determining the areas of digital citizenship schools with large amounts of technology choose to emphasize will add to the academic literature and aid other schools by helping prioritize potential implementation.

Importance of Teaching Digital Citizenship

Teaching digital citizenship is important for a variety of reasons. As was stated before, technology use goes beyond convenience to a necessity for many individuals (Isman & Ozlem, 2014). Even if it is not a necessity, many youths already have access to the Internet by the time they are 12 and may have already developed behaviors that will be their norm for technology usage (Chng et al., 2015; Hollandsworth et al., 2011; Ribble & Miller, 2013). These norms may not be academically appropriate. Students whose parents are not digitally literate in applications like e-mail and basic online research are more likely to use technology for simple pleasures like video consumption and social media (Braverman, 2016). In doing so, students begin to develop digital literacies at home that are often not acceptable in the academic world (Braverman, 2016; Pfannenstiel, 2010). Schools must accept the challenge of guiding students on their digital path toward behaviors beneficial to their academics, school community, and personal life.

The opportunities for students with the world of knowledge available to them is great as is the potential for both short- and long-term consequences when used inappropriately. Livingstone (2014) suggested younger children are often receptive and even looking to parents to help them determine what is real and fake online as they seek to navigate complex interpersonal networks. Responsible adults must take advantage of this opportunity as young adults who regularly used the Internet did not display emotional maturity (Dangwal & Srivastava, 2016). Ohler (2010) claimed wisdom is something society once had the luxury of gaining alongside age, but has become a necessity for youth who spend so much time online processing information.

Some may wonder whether students and society as a whole benefit from or are hurt by the increase in technology due to online addiction in various forms that negatively impacts many individuals. Yamamoto and Ananou (2015) posited this was similar to the egg and chicken query as to which came first when looking at people who are predisposed to certain behaviors. Excessive gambling, sex addiction, and poor social behaviors are not new phenomena. If people possess a predisposition to negative behaviors like those listed, technology may magnify these problems or provide new avenues for satisfaction. In this way, old problems have new modes of operation. The need for good character has simply become the need for good digital citizenship where people examine their technology behaviors and determine if they are contributing to the greater good of society (Olcott, Carrera Farran, Gallardo Echenique, & González Martinez, 2015; Yamamoto & Ananou, 2015).

In education, this can be as simple as the purposeful integration of technology such that it truly impacts learning rather than providing yet another avenue for students to go online, experiencing temptations toward inappropriate use (Hinvest & Brosnan, 2012). Students should be provided appropriate guidelines and boundaries as well as assignments that are meaningful and encourage true learning as opposed to a focus on short-term assignments where the grade is the most important aspect (Ma et al., 2008). Teachers can leverage their face-to-face relationships with students to foster technology use that focuses more on academic rather than personal uses. Teachers must be cognizant of their students' desired use in order to focus student efforts otherwise (Nowell, 2014). An example of the need for awareness is cheating. Some students desire to use technology for this purpose. However, teachers should look for deterrents to this behavior. A major reason students choose not to cheat is simply the policy in place (Kolb, Longest, & Singer, 2015). It is therefore important to understand why students cheat and then to develop policies and practices that discourage students from cheating or help them to see the lack of benefit of cheating (Brent & Atkisson, 2011). Influencing student perception of cheating as wrong could also help. Students who believed cheating was a severe violation tended to cheat less. In addition, the perception of peer acceptance of cheating impacted the likelihood of a student cheating (Stephens et al., 2007). Recognizing the purpose of using technology was noted by Ohler (2010), who believed people must actually step back from their technology in order to reflect on its use and impact in their lives. In order to properly address a problem, it must first be recognized and understood.

An additional reason for teaching digital citizenship is the perceived gap between America and the rest of the world in terms of global competition. Secondary schools are being targeted as the place to reduce this gap (Arnold, 2007). In some cases, schools are providing devices and Internet access to students, which prompts the need to make digital citizenship ingrained in schools (Marcoux, 2014). The integration of technological hardware and online connectivity also leads educators and school systems to evaluate their overall philosophy of what kind of intellectual and moral education should be provided students (Metz, 2011). Educators must recognize the way technology in the classroom can change learning, including the impact on the physical layout of the classroom and the manner in which students are allowed to move about and interact with their environment (Ehret & Hollett, 2014).

As the amount of technology in schools increases, teachers should consider what students should value (Metz, 2011). It is important to consider that students' digital competencies depend more on educating students than providing them with hardware (Daniels, Jacobsen, Varnhagen, & Friesen, 2013; Felt et al., 2012; Marcoux, 2014). Without proper guidance, students' habits may not always be positive and may result in such phenomena as cheating, plagiarism, cyberbullying, and/or lack of online privacy concerns. As mentioned before, cheating and plagiarism are concerning because students admit to these acts and see these behaviors as normal within their peer group (D. L. R. Jones, 2011; Ma et al., 2008; Yamamoto & Ananou, 2015). Cyberbullying is particularly harmful because it can escalate in magnitude quickly and often impacts the school day whether it occurred at school or not (Levy, 2011; Ribble & Miller, 2013). Another danger is online privacy. Teenagers are often ignorant and indifferent toward ensuring their privacy on the Internet (Moore, 2012). Teens do not realize their personal information shared through social media avenues can reach much farther than they intended, possibly going to future academic institutions and employers.

A different aspect that is not as much of a danger as an opportunity is the ability to engage students in current political events. Technology is already used to provide information to people and even to vote, but the goal is to have citizens who filter the information in such a way to be knowledgeable, engaged citizens (Ohler, 2010). For example, in Egypt in 2011, social media helped organize a revolution that overthrew a 30-year dictatorship. This revolt did not happen overnight but as Egyptians connected with people outside of their national and cultural norms through chat rooms and massive multiplayer online games (Herrera, 2012). This behavior is not limited to Egypt. A trend for young people in America is to disengage from typical political involvement like conventions to more social forms such as following and supporting their favorite band's cause through social media (Bennett, 2008). The definition of a global citizen is not limited in scope to physical travel but can now take place from computer to computer, allowing like-minded individuals to connect more easily.

All of these dangers and opportunities lead to a recognition for educators to help instill a greater sense of morality in society (Koh, 2012). Moral reasoning does not always increase through traditional schooling but requires intentional focus (Nather, 2013). Some countries, like China and Singapore, have already included formal, moral education as part of their required curriculum (Koh, 2012). Bell and Liu (2015) showed that a purposeful focus on moral education could have a positive impact on moral reasoning even when conducted using online methods. Improving students' ethical media competence through focused efforts would also likely be beneficial. Students who scored high on a test of ethical media competence were both less likely to engage in cyberbullying or be victims of cyber victimization (Müller, Pfetsch, & Ittel, 2014). Focused efforts by schools could be seen as similar to serving lunch or breakfast. A service once accepted as parental responsibility has now been adopted by the school system for the greater good of society.

Digital citizenship is a topic that is relevant in society and requires intentional focus in education to truly grow an individual's moral reasoning (Bell & Liu, 2015). Educators should take advantage of young children's desire for guidance and determine the values that should be instilled. Technology provides opportunities for new, relational connections that can be guided to promote a better society. As students encounter old problems in a new way when online, educators can help direct online habits promoting health and academic fidelity.

Barriers to Teaching Digital Citizenship

The barriers inherent to digital citizenship are closely tied to the same barriers for implementing 21st-century learning. The main barrier is that the education system will have to change to usher in a new era of learning. This new era of learning includes digital citizenship, which is a standard for administrators and teachers (ISTE, 2008, 2009). For change to be overarching, ongoing, and impactful, barriers should be addressed. Oftentimes, most of a school's focus is on the hardware or technology infrastructure as opposed to investing in the people who support and facilitate learning in the building (Daniels et al., 2013). A focus on hardware alone provides easy metrics for accountability but does not guarantee actual changes are taking place in the classroom.

School districts are not the only ones with a responsibility to train teachers on digital citizenship. Researchers, governments, and government entities are crying out for the inclusion of digital citizenship education in teacher preparation programs (Moll & Krug, 2008; Ribble, 2012). Teacher preparation programs should be immersing future teachers in the technology being used by students to determine how it can best be used in the classroom and identify digital citizenship issues that may arise (Moll & Krug, 2008). Providing professional development for teachers to teach digital citizenship components is beneficial in delivering adequate instruction to students (Hollandsworth et al., 2011). Training is much needed because moral issues, including moral education, can be gray rather than black or white, depending on the perspective of the observer (Burns & Burns, 2011; Olcott et al., 2015). Even when the issue seems black and white, those regarded as experts may disagree on the resolution to moral dilemmas or their general philosophy on moral education (Burns & Burns, 2011). In America, schools are representative of the diverse culture surrounding them. Teachers feel inadequately prepared to provide moral education and do not want to wade into an arena fraught with high potential for conflict or litigation if the moral education is inharmonious when compared to parents' beliefs (Koh, 2012). Providing teachers standards for digital citizenship agreed upon by local stakeholders would encourage positive values relative to the community.

Another barrier to teaching digital citizenship involves the technology itself. Teachers often view sites like Twitter, Skype, and YouTube as useful learning tools. District or building administrators may believe these sites pose too great a risk to allow students access to them during the school day. Teachers need to be trusted to make thoughtful decisions regarding the value of such sites with regard to their impact on learning in the classroom. Allowing teachers this freedom provides an example for students in evaluating sites for merit and morality (McRae, 2012). Koh (2014) found multiple YouTube videos on moral dilemmas that could be used to ascertain students' moral reasoning according to Kohlberg. The use of YouTube is an example of technology use in education that may enhance digital and community citizenship. This is important because students' criticism toward moral education is its lack of connection to reality (Koh, 2012). YouTube is a common medium to students representing personal glimpses of people's lives. Additionally, as teachers utilize media for classroom purposes they will increase their ability to understand the inherent digital citizenship concerns and components (Moll & Krug, 2008). The inherent fear in exposing students to danger is real and must be addressed (Federal Communications Commission, 2016). However, allowing teachers to use their professional judgment guided by school policy will promote creative, relevant lessons using new technology.

In contrast to the idea that teachers are held back from using new technologies, one of the main inhibitors to positive technological change according to superintendents is traditional teaching and districts that hold to the industrial model used since the early 20th century in America (Biggs, 2013). Many teachers stated the strongest obstacle to systemic change would be other teachers who are unwilling to modify their current practices (Arnold, 2007). Sometimes seasoned teachers have mixed opinions on the benefits of technology (Hinvest & Brosnan, 2012). This is not to say veteran teachers are the problem, only that a perception exists that younger teachers are more comfortable with technology.

Research actually provides little indication that younger or older teachers are more likely to integrate technology. Miles (2014) found no direct correlation between teachers' years of experience and integration of 21st-century skills into their classroom. Veteran teachers actually tend to lift some restrictions on risk-taking with their students (McRae, 2012). For those teachers stuck in a traditional mindset, the issue could simply result from a fear technology is replacing vital components of education or the teaching profession itself. This further shows the need for effective training to empower apprehensive teachers and encourage the use of technology to expand learning opportunities (Buckley, 2014). Teachers must learn to build on their content and pedagogy to combine them successfully with technology in order to adapt to changing times and coordinate learning within their classroom (Koehler, Mishra, & Cain, 2013). Young or old, teachers should focus on pedagogy with the current group of students and make technology another tool in their bag of knowledge.

If teachers are to receive training, someone must choose the training and implement it within the district. Within the last few years, there has been research focusing on leadership within schools, particularly superintendents and principals, as it regards 21st-century skills. In one such study Arrington (2014) stated there was a gap between the current educational system and what was perceived to be an effective 21st-century skills classroom. For change to take place, the district instructional leader must be the one to implement the needed changes. For that to happen, the instructional leader must have an overall grasp of what digital age learning encompasses and portray that to teachers (Arrington, 2014). While they may have an overall grasp of educational technology, this may not translate into applicable knowledge. For example, as educational technology became a focus in Turkey, many building leaders recognized the need for professional development to gain an understanding of effective use of educational technology for learning (Aksal, 2015). District leaders must truly be instructional leaders connected to the learning under their jurisdiction.

One reason the role of superintendent as instructional leader is so important is because superintendents make many decisions impacting implementation of 21st-century skills in their district. Unfortunately, one study showed the district leader often had a shallow knowledge base regarding 21st-century skills. Superintendents viewed their responsibility as being a change agent by increasing awareness and modeling of 21st-century skills particularly in the areas of culture and society among stakeholders. At the same time, superintendents acknowledged the need to not only lead by example but also deliver directives and professional development to move their districts along (Biggs, 2013). The problem with directives over leadership is ineffective use of technology based on a district mandate may actually lead to less effective learning in classrooms (Hinvest & Brosnan, 2012). Sheninger (2014) called on instructional leaders to develop a culture allowing the use of technology alongside the teaching of digital citizenship. The superintendent must stay current and lead by example to provide an environment conducive to pedagogical innovation supported by technology.

Digital citizenship is one component of 21st-century skills. Ideally, digital citizenship would be integrated into all 21st-century learning, thereby facing the same obstacles to integration as 21st-century skills. The hurdles to implementation start with a need to move away from the hardware to a focus on learning and systems evaluations. Key aspects to review are the training and guidance provided educators to help them instill the proper skills and values consistent with their local community. To do so, teachers need to work hand in hand with their technology departments to gain access to and utilize new technologies. All of these efforts need to be spearheaded by district personnel leading by example. Addressing these obstacles will support a learning environment rich in the responsible use of technology.

Summary

Three facets were researched that surround digital citizenship, teacher perceptions, and digital citizenship instruction implementation. These facets included the nine tenets that comprise digital citizenship, reasons for teaching digital citizenship, and barriers for teaching digital citizenship.

First, the broad definition of digital citizenship and its nine elements provide a better understanding of the breadth and depth of digital citizenship. Digital access refers to providing technology access in the form of hardware and connectivity. Digital commerce is the purchase of goods, services, or information online. Digital communication is communication using cell phones, computers, and other Internet-connected devices for verbal, written, and nonverbal transmissions. Digital literacy addresses the need for individuals to understand how to use technology. Digital etiquette includes the rules and behaviors that surround our digital communications to maintain socially acceptable actions. Digital laws are rules and regulations imposed by governments surrounding technology and digital information. Digital rights and responsibilities go to the idea that people should view technology as a privilege requiring appropriate behavior to be a productive member of society. Digital health and wellness look at the use of technology and its impact on users' physical health in areas like sleep, posture, and Internet addiction among others. Finally, digital security draws attention to the need for a user to protect one's information and property from threats like hackers, thieves, and viruses. These tenets can be viewed individually, but the complexity of technology often creates an overlap where the different tenets are intertwined.

Second, reasons for teaching digital citizenship essentially showed the proliferation of technology in students' current lives and the need to educate them on the appropriate use of technology. Students form habits in technology usage early on but are also looking for adults to help guide them in these habits. Digital citizenship instruction is an effort to curb negative actions that can ensue when students do not have a concept of the consequences of inappropriate technology usage. The relationship teachers had with their students as a trusted authority figure provides an excellent opportunity to promote digital citizenship. To do this, schools had to intentionally focus on technological competencies over the physical components of technology like type of computer used. In doing this, a purposeful focus on digital citizenship instruction can increase students' moral reasoning skills.

Third and finally, the barriers for teaching digital citizenship in schools show teachers may not be comfortable or knowledgeable in regard to digital citizenship. The barrier can be summed up in one word, change. A change would be needed in the public school system. Change would be needed in teacher preparation programs as well as current teacher professional development. Even changing technology provides a barrier as educators struggle to remain up to date and safe with new technologies. Not only teachers, but also educational leaders must remain current so they can maintain technological competencies as they develop policies and make decisions that drive their schools. These elements all combine to show why there is a need to examine the regard teachers have for digital citizenship in their perceptions and practices.

Chapter Three addresses the design and methodology used in the study. The design of the study was quantitative using a survey instrument to garner feedback from teachers in one-to-one high schools in Missouri. Validity and reliability of the instrument was addressed both before and after the study. Chapter Four then presents the data and statistics from the survey with Chapter Five discussing the results.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

Kohlberg's (1973) theory of moral development showed individuals increase in their moral reasoning skills as they grow older. People living and growing older in the 21st-century are forced to contend with digital citizenship as they navigate the new technological waters (Ohler, 2010; Ribble, 2011). More specifically, teachers are encountering new technologies, opportunities, and dangers in the digital classroom, creating a need for digital citizenship awareness. As digital citizenship awareness grows and digital citizenship implementation begins, barriers may be encountered that inhibit digital citizenship education. This research focused on digital citizenship to determine if teachers in a one-to-one technology program perceived digital citizenship was important and if they were specifically teaching or integrating the elements into their classrooms.

This paper sought to examine the problem of creating awareness in students attending schools with a one-to-one technology program with regard to digital citizenship by answering the following research questions related to the nine tenets of digital citizenship:

1. What elements of digital citizenship do teachers in a one-to-one school environment perceive to be important?
2. What elements of digital citizenship do teachers in a one-to-one school environment address in their school?
3. What role does age, gender, or grade level taught have in impacting teachers' perceptions regarding digital citizenship?

Research Design

The three questions addressed in this study were examined using a quantitative design collecting data from teachers in schools with existing one-to-one technology programs. Permission was obtained to use a survey by the contributing authors, Suppo and Ribble (see Appendix A). The survey was developed by Suppo (2013) in his study of district-level administrators' perceptions of digital citizenship and was slightly modified to provide data for this research (see Appendix B). Suppo utilized digital citizenship audits designed by Ribble (2011). Suppo's survey consisted of 62 questions including demographic information. Question 57 in the assessment contained nine items and corresponded to Question 39 in the modified assessment.

Questions 37 through 54 from Suppo's survey were removed for two reasons. The first reason was that they had no bearing on teachers' perceptions of digital citizenship and only served as a way to compare perceptions of digital behaviors versus the more commonplace physical or environmental behaviors displayed by students in a traditional school setting. Based on the original research on validity and reliability the researcher determined removing Questions 37-54 would not impact the validity and reliability of the modified survey. With regard to reliability, in the original survey, a Cronbach's Alpha score was given for these questions separately from Questions 1-36. It was the opinion of the researcher that Questions 37-54 were not pertinent to this research. Instead, questions 37-54 provided information relative to physical citizenship issues as opposed to digital citizenship issues. For example, Question 37 in the original survey regarded stealing school property. The intent in Suppo's (2013) study was to draw a parallel between physical actions, stealing school property, and digital actions like plagiarism, which is stealing intellectual material. As this did not address the topic of teachers' perception and implementation of digital citizenship-related concepts, these questions did not benefit the study. Instead, this leads to the second reason the questions were eliminated. There was concern the questions would actually discourage participation due to an increase in time needed to complete the survey. Additionally, it was determined validity was unaffected by eliminating Questions 37-54 as the survey passed examination for face validity by experts in the field and Suppo's university of study. This examination determined the survey questions were stated in such a way their intent was clear to the participant. Since the content and wording of the remaining questions were not changed, face validity still held true. Professors at the researcher's university of study supported the decision to modify the survey.

Question 58 was modified to more clearly define primary teaching assignments by grade rather than using the terminology elementary, middle, and high school as this study addressed high schools only. Question 59 was demographic and deleted as it was intended for district-level administration rather than teachers. Question 60 was modified to make the age ranges more similar to a teacher in his or her 20s and 30s, as opposed to the range of the original question. Question 41 in the modified survey was moved from its position in the original survey to place the two demographic questions relative to a teaching assignment next to each other, leaving the last two questions as the personal demographic questions.

Participants. The participants for this study were teachers, not administrators, in districts identified as having a one-to-one technology program under the criteria utilized by Tackett (2014) in her doctoral research. Dr. Tackett granted permission to use this information (see Appendix C). Additionally, surveys were sent to schools not found to be one-to-one technology programs in case they had adopted the initiative in the time following Dr. Tackett's initial survey. Participating teachers were from multiple grade levels or disciplines within the 45 schools who self-identified as having a one-to-one technology program.

Questionnaire. Section 1 of this survey (see Appendix D) addressed the first research question regarding what teachers in a one-to-one school environment perceived regarding digital citizenship. The questions ascertained teachers' perceptions of the importance of increasing student understanding and mindfulness of digital citizenship. This study added to the knowledge base by surveying the people who had direct contact with students and had a better understanding of what was actually occurring in the classroom. Where Suppo (2013) found a negative relationship between district-level administrators' perceptions of digital citizenship and digital citizenship education, knowing how teachers' perceptions compared to digital citizenship education provided more focused data where the instruction actually took place.

Questions 37, 38, 39, and 40 were designed to evaluate the actual practice that occurred within the school. Question 37 asked a broad question to determine the extent to which digital citizenship as a whole was addressed in the school. Question 38 was a follow-up question for those who answered digital citizenship was not addressed at all in their building, asking if they felt it should be addressed. Questions 39 and 40 gained more specificity regarding digital citizenship by tenet and grade level respectively. These questions were used to determine if any relationship existed between teachers' perceptions and practice relative to digital citizenship.

The last section, Questions 41, 42, and 43, collected demographic data from the participants. These data served to examine any relationships that may have existed between the degree to which digital citizenship was perceived to be addressed in a school and factors such as age of the teacher, grade level taught, and gender. This provided further disaggregated information to add to the understanding of digital citizenship education within schools.

Consent. In accordance with the guidelines of Southwest Baptist University regarding the protection of human participants, the researcher obtained approval by the Research Review Board (RRB). Principals of 565 high schools in Missouri were e-mailed with a request to complete a short survey indicating if their high school met the qualification of having a one-to-one technology program in the 2016-2017 school year for participation in the study (see Appendix E). If their building qualified for the study, principals were asked to forward the e-mail with the attached teacher consent e-mail to the teachers in their building. Teachers were provided a consent document in e-mail form (see Appendix F). The consent form stated the manner in which their information would be used and how it would be kept private. Teachers were instructed their completion and submission of the survey indicated their consent to be included in the survey. Teachers were also informed they could quit the survey at any time. The demographic information collected during the actual survey would not allow them to be personally identified and responses were anonymous.

Selection/Sampling. The population sampled was certified staff, not administrators, in the state of Missouri in high schools participating in a one-to-one technology program during the 2016-2017 school year or before. Using Tackett's (2014) definition, “[a] one to one technology program was defined as any school where each student has an Internet-connected, wireless computing device for use in the classroom 24 hours a day, seven days a week” (p. 8). An e-mail was sent to 565 principals of high schools in Missouri asking if they met the criteria as a one-to-one technology program, with a brief explanation of the study. The list of principals was obtained from the Missouri Department of Elementary and Secondary Education’s (DESE, 2017) Missouri Comprehensive Data System. Of those e-mails, 24 had to be corrected by going to district Web sites and finding the actual principal of those buildings. Additionally, some of those buildings were classified as secondary, but were alternative facilities housing more than Grades 9-12. The initial e-mail asked principals to forward the link to the teachers in their building if they qualified for the study. There were 123 principals who responded to the survey with 45 having a one-to-one technology program in their school.

The e-mail to teachers contained a link to a survey conducted using QuestionPro. The time frame for data collection was 7 weeks. A reminder e-mail was sent twice to those who had not yet responded. The survey was closed at 7 weeks. Teachers were allowed to stop the survey at any time although it may have prevented their responses from being used. The teacher population in the 45 schools with a one-to-one technology program was 2,535 teachers. Of those eligible teachers, 180 started the survey with 167 completing the survey. Although not every question had to be answered for all forms of analysis, every question targeted toward a specific tenet had to be answered to provide data for that tenet. For example, if a respondent skipped Question 1, which related to digital etiquette, none of that respondent’s data could be processed for digital etiquette.

The response rate for the survey was deemed adequate by the researcher and university advisor for the purpose of answering the research questions.

Instrumentation

The survey contained three district sections. Section 1 consisted of Questions 1-36 and addressed Research Question 1 regarding teachers' perceptions of the importance of the nine tenets of digital citizenship in schools. Section 2 consisted of Questions 37-40, which examined the actual practice of teaching digital citizenship in the school. Question 38 addressed a teacher's perception regarding whether digital citizenship should be taught in their school if they felt it was not currently taught at all. Once responses were collected, the raw data were exported from QuestionPro, which was the online survey instrument used in the study. The data were examined using the IBM Statistical Package for Social Science Statistics (SPSS) program.

Data collected from questions in Sections 1 and 2 were evaluated based on the percentage of responses for each category. Descriptive statistics and inferences utilizing the percentage of responses in each category were reported for Sections 1 and 2. The data were presented side by side with a comparison for each element of digital citizenship. These results showed which elements teachers in a one-to-one technology viewed as important based on perceptions and which elements were addressed in their school.

Section 3 contained Questions 41-43, which were demographic questions used to determine potential differences between grade level taught, age, and gender. Data from Section 3 were analyzed using a one-way between groups analysis of variance (ANOVA) to investigate if age, gender, or grade level taught had any bearing on expressed digital citizenship perceptions as exhibited by a statistically significant difference at the .05 level.

Validity and Reliability

The research survey for this study was examined to ensure it met academic standards for validity and reliability. As this survey was adapted from previous research, those test results were able to be incorporated into the determination of validity and reliability for this survey. Specifically, the validity was taken from the survey used by Suppo (2013). Reliability was also taken from the original survey's data.

Validity. The process for establishing the face validity of Suppo's survey was to gather a panel of experts comprised of Dr. Mike Ribble, "one technology expert and one curriculum expert from three separate Pennsylvania Intermediate Units" (Suppo, 2013, p. 47). The survey was taken, reviewed, and commented on by the panel of experts multiple times to establish validity. Further suggestions were also obtained from the Indiana University of Pennsylvania Applied Research Lab.

Reliability. The original survey determined reliability using a post hoc analysis of survey questions relating to digital citizenship perceptions. Reliability of Questions 1-36 (Section 1) and again on Questions 37-54 (Section 2) on the original survey was established using Cronbach's Alpha. These two sections were seen to be relatively separate from each other, which is another reason why Section 2 was excluded from the survey instrument used for this research. The Cronbach's Alpha for Section 1 of the original survey, and consequently section one of this research survey, was .913.

Summary of validity and reliability. Dr. Suppo (2013) established validity for this survey using a panel of experts to review the questions and provide modifications.

He also obtained feedback from his home university's research lab. Reliability was determined using post hoc analysis and Cronbach's Alpha test, which established reliability. Based on these two factors it was determined this survey would accurately address the research questions addressed in this study.

Survey disseminated to teachers. An e-mail was sent in early September of 2017 to principals of high schools in Missouri asking if their school had a one-to-one technology program during the 2016-2017 school year. If the principal identified the high school had implemented a one-to-one technology program, the principal was asked to forward the e-mail to teachers. The e-mail contained a link to the teacher consent document and a link to the actual teacher survey used for the purposes of this study. Reminders were sent to principals in late September and mid-October. The survey was closed in late October. Overall, the data collection time frame was 7 weeks long.

Final Survey

The final survey was shown to be valid and reliable. Validity was based on the face validity of the original survey. Reliability results were taken from the original survey as well as the addition of data from this research. Putting those two aspects of reliability together provided evidence of the reliability of the survey.

Validity. The survey was initially validated by Suppo (2013) as previously stated. Prior to sending out this survey, it was reviewed by the members of the researcher's dissertation committee and the Research Review Board at Southwest Baptist University.

Reliability. Questions 1-36 were examined for internal consistency using Cronbach's alpha. The analysis showed an α of .926, which was consistent with the alpha score in the original survey by Suppo (2013). Question 39 was also analyzed for reliability as it contained nine Likert-scale questions. The Cronbach's alpha for this portion of the survey was .909. Based on these Cronbach's alpha scores, the survey had established reliability.

Summary

Kohlberg (1973) believed moral reasoning advanced with age and experience. The onslaught of technological advances in society and schools has created a need to examine digital citizenship in high schools where age might be lacking but experiences are taking place at an ever-increasing pace. This quantitative study addressed three questions based on digital citizenship in schools by surveying teachers in schools with an existing one-to-one technology program. The survey for this study consisted of three parts regarding teachers' perceptions, practices, and demographics. Perceptions and practices were examined for face value comparisons with each other and the demographics were evaluated using a three-way analysis of variance for significant differences. The study was shown to be valid and reliable based on the work of Suppo (2013). Following this study, the body of academic knowledge will be increased by the addition of information related to digital citizenship perceptions and frequency of practice by teachers in schools where every student has a personal electronic device.

CHAPTER FOUR

ANALYSIS OF THE DATA

This study was conducted to better understand the perceptions of teachers in one-to-one schools in Missouri regarding the nine tenets of digital citizenship and the implementation of those tenets. The study asked three questions in order to assess teacher perceptions and digital citizenship instruction frequency in Missouri high schools with a one-to-one technology program.

1. What elements of digital citizenship do teachers in a one-to-one school environment perceive to be important?
2. What elements of digital citizenship do teachers in a one-to-one school environment address in their school?
3. What role does age, gender, or grade level taught have in impacting teachers' perceptions regarding digital citizenship?

Teacher perceptions on digital citizenship were studied overall with attention given to mean, standard deviation, and percent of responses in the *very important*, *important*, and *somewhat important* categories. The mean provided information showing how important or unimportant teachers perceived the tenets to be. The standard deviation showed how much variation was present in individual answers. A smaller standard deviation would mean more uniform responses from teachers while a larger standard deviation would show teachers' perceptions were more varied, as indicated by their responses. Examining teacher perceptions based on the percent of responses in the top three categories provided an easy method of ascertaining perceptions. Teacher perceptions were then disaggregated by age, gender, and grade level for examination of significant differences among the subgroups.

The study also sought to examine the frequency with which digital citizenship was taught. Digital citizenship instruction in schools was examined to determine if formal or informal curricula were in place and whether time was specifically devoted to teaching digital citizenship. The frequency of digital citizenship instruction was then assessed by tenet using descriptive statistics. In this case, the mean showed whether each tenet was taught frequently or infrequently. The standard deviation was used to observe the amount of variation in responses. Examinations of percent responses in the *very frequently*, *frequently*, and *somewhat frequently* categories were also used. The frequency of digital citizenship instruction by grade level was reviewed using the same statistics.

The three research questions focused on teachers' perception of digital citizenship, implementation of digital citizenship, and differences between subgroups. As data were examined, they were evaluated to determine what inferences could be drawn from the collective responses and statistical analysis. The data, findings, and inferences were presented as appropriate where they answered the research questions.

Teachers' Perceptions on Digital Citizenship

Teachers' perceptions on digital citizenship were examined to determine if teachers saw value or importance in each of the tenets of digital citizenship. This fundamental question provided an underpinning by which the remainder of the questions was examined. To determine teachers' perceptions, 2,535 teachers from 45 schools identified as having a one-to-one technology program were invited to participate and 167 chose to participate, for a return rate of 6.59%. Teachers were asked 36 questions over their perceptions on the nine tenets of digital citizenship. Each of the nine tenets had four questions focused on that particular tenet to increase reliability by gaining multiple responses for each tenet. The Likert-scale responses (*very important*, *important*, *somewhat important*, *somewhat unimportant*, *unimportant*, and *very unimportant*) were counted for each group of four to determine the total number of responses for a given tenet. This count was then used to calculate the percentage of responses as well. For example, digital rights and responsibilities had 658 total responses over the course of four questions or about 165 responses per question. Of those 658 responses, 368 designated the digital citizenship concern as *very important*, which was 55.93% of the total responses to questions regarding digital rights and responsibilities (see Table 1). This examination showed digital rights and responsibilities, 55.93%, as having the highest percentage of responses in the *very important* category and digital commerce, 26.48%, as the lowest.

Teachers considered all nine aspects of digital citizenship to have importance, with the majority of teachers placing each tenet in the *very important* or *important* categories (see Table 2). When the percent of teachers indicating a tenet as *very important* or *important* was compiled, the top two categories were digital rights and responsibilities, 87.54%, and digital literacy, 87.44%. The least important of the tenets were digital health and wellness, 61.63%, and digital commerce, 56.73%. When responses were compiled as indicating *very important*, *important*, and *somewhat important*, the highest response was digital literacy, 97.43%, and the lowest was digital commerce, 82.60% (see Table 2).

Table 1

Teachers' Perceptions on Digital Citizenship in High Schools With a One-to-One Technology Program

Digital Citizenship Tenet	Likert-Scale Response	*N*	% of Responses
Digital Rights and Responsibilities	Very Important	368	55.93
	Important	208	31.61
	Somewhat Important	53	8.05
	Somewhat Unimportant	8	1.22
	Unimportant	8	1.22
	Very Unimportant	13	1.98
	Total	658	100.00
Digital Literacy	Very Important	333	50.38
	Important	245	37.07
	Somewhat Important	66	9.98
	Somewhat Unimportant	8	1.21
	Unimportant	5	.76
	Very Unimportant	4	.61
	Total	661	100.00
Digital Law	Very Important	307	46.37
	Important	220	33.23
	Somewhat Important	84	12.69
	Somewhat Unimportant	20	3.02
	Unimportant	14	2.11
	Very Unimportant	17	2.57
	Total	662	100.00
Digital Etiquette	Very Important	274	41.58
	Important	238	36.12
	Somewhat Important	98	14.87
	Somewhat Unimportant	21	3.19
	Unimportant	10	1.52
	Very Unimportant	18	2.73
	Total	659	100.00

Table 1 (continued)

Teachers' Perceptions on Digital Citizenship in High Schools With a One-to-One Technology Program

Digital Citizenship Tenet	Likert-Scale Response	*N*	% of Responses
Digital Communication	Very Important	266	40.67
	Important	208	31.80
	Somewhat Important	121	18.50
	Somewhat Unimportant	27	4.13
	Unimportant	14	2.14
	Very Unimportant	18	2.75
	Total	654	100.00
Digital Security	Very Important	267	40.39
	Important	251	37.97
	Somewhat Important	108	16.34
	Somewhat Unimportant	20	3.03
	Unimportant	6	.91
	Very Unimportant	9	1.36
	Total	661	100.00
Digital Access	Very Important	239	36.27
	Important	247	37.48
	Somewhat Important	133	20.18
	Somewhat Unimportant	23	3.49
	Unimportant	9	1.37
	Very Unimportant	8	1.21
	Total	659	100.00
Digital Health and Wellness	Very Important	224	33.84
	Important	184	27.79
	Somewhat Important	164	24.77
	Somewhat Unimportant	49	7.40
	Unimportant	21	3.17
	Very Unimportant	20	3.02
	Total	662	100.00
Digital Commerce	Very Important	175	26.48
	Important	200	30.26
	Somewhat Important	171	25.87
	Somewhat Unimportant	65	9.83
	Unimportant	31	4.69
	Very Unimportant	19	2.87
	Total	661	100.00

Table 2

Summary of Teachers' Perceptions on Digital Citizenship in High Schools With a One-to-One Technology Program

Digital Citizenship Tenet	% of Responses *Very Important* and *Important*	% of Responses *Very Important*, *Important*, and *Somewhat Important*
Digital Literacy	87.44	97.43
Digital Rights and Responsibilities	87.54	95.59
Digital Security	78.37	94.70
Digital Access	73.75	93.93
Digital Etiquette	77.69	92.56
Digital Law	79.61	92.30
Digital Communication	72.48	90.98
Digital Health and Wellness	61.63	86.40
Digital Commerce	56.73	82.60

In summary, teachers' perceptions indicated that digital rights and responsibilities and digital literacy were most important. Teachers' perceptions indicated that digital health and wellness and digital commerce were the least important. However, all teachers saw the tenets of digital citizenship as at least somewhat important. Seven of the nine tenets had response percentages above 90% for *very important*, *important*, and *somewhat important*, with 82.60% being the lowest percentage of the remaining two tenets. This finding allowed for an understanding of whether instruction in schools followed these perceptions closely or not.

Digital Citizenship Instruction in Schools

After determining teachers perceived digital citizenship was important, an analysis was conducted to determine whether teachers' perceptions were mirrored in their curricular practices. Since teachers indicated digital citizenship was important, what was the level of instruction taking place in the classroom? To understand the level of instruction, the amount of time given to digital citizenship instruction during the school day as well as whether a formal curriculum was in place were assessed. Teachers were asked how digital citizenship was addressed within their high school (see Table 3).

Table 3

Digital Citizenship Instruction Frequency and Type in High Schools With a One-to-One Technology Program

Frequency and Kind of Digital Citizenship Instruction	*N*	% of responses
Digital citizenship skills are addressed within a technology specific course that all students must take.	3	1.85
Digital citizenship skills are addressed across the curriculum in most subjects with a formally written digital citizenship curriculum.	35	21.60
Digital citizenship skills are addressed across the curriculum in most subjects but without a formally written digital citizenship curriculum.	77	47.53
Somewhat infrequently	42	25.93
Not at all	5	3.09
Total	162	100.00

Of the teachers surveyed, 70.98% perceived most students were receiving some kind of consistent instruction on digital citizenship whether it was formal or not. However, only 23.46% of teachers indicated their school had a formally written digital citizenship curriculum being taught. Additionally, 25.93% of the teachers indicated students received infrequent instruction on digital citizenship, with 3.09% indicating it was not addressed at their high school at all.

Time is a resource schools must manage well to account for state and federal regulations and provide the best education possible to its students. In this study, 76.54% of the teachers indicated that, for their school, digital citizenship was not important enough to formally develop a curriculum or devote classroom instruction time to it. A side note to this data is that individual teachers were surveyed and not individual schools. While 76.54% of teachers indicated their school did not have a formal curriculum, there were multiple respondents from one high school. These data must be taken to indicate differences when teachers are in a school with a specific digital citizenship curriculum as opposed to when they are not. These data do not indicate 76.54% of the schools participating in the survey lacked a formal digital citizenship curriculum. Finally, more teachers indicated they addressed it somewhat infrequently or not at all than those who had a formal class or curriculum to address it.

Frequency of Digital Citizenship Instruction by Tenet

After determining whether digital citizenship was taught in the school, the next step was to determine the frequency of instruction for each tenet. With the survey showing 70.98% of teachers indicated digital citizenship was addressed within their school, most stated it was done without any formal curriculum. The lack of formal curriculum may have led teachers to address some components of digital citizenship, but not by design nor intentionally. Even with a formal curriculum, it was possible some tenets had been selectively abandoned for the sake of time.

Question 39 asked teachers how frequently they addressed each of the nine tenets of digital citizenship using a Likert scale where scores could range from 1 being *Very Frequently* to 6 being *Very Infrequently*. Teachers who stated digital citizenship was not addressed in their school at all did not participate in this question. Question 39 was examined by noting the percentage of responses in each category for each tenet.

In general, teachers marked very few items as being addressed *very frequently* or even *frequently*. Three tenets—digital law, 3.29%; digital commerce, 2.63%; and digital health and wellness, 1.97%—showed a small percentage of teachers felt they were taught *very frequently* (see Table 4). In fact, when the categories of *very frequently*, *frequently*, and *somewhat frequently* were examined, they were all below 50%: digital law, 44.74%; digital commerce, 19.08%; and digital health and wellness, 19.08%, (see Table 5).

There were six tenets where teacher responses stated the frequency was greater than 50% when considered to be taught *very frequently*, *frequently*, or *somewhat frequently*. They were digital communication, 78.29%; digital literacy, 78.00%; digital access, 65.79%; digital etiquette, 65.79%; digital rights and responsibilities, 57.24%; and digital security, 50.33%. Of these six, the only tenet with more than 50% of teacher responses indicating it was taught *very frequently* or *frequently* was digital literacy, 54.00% (see Table 5). None of them showed a large number of responses in the *very frequently* category, with the highest percentage being digital communication, 21.05%.

Table 4

Frequency of Digital Citizenship Instruction by Tenet in High Schools With a One-to-One Technology Program

Digital Citizenship Tenet	Likert-Scale Response	*N*	% of responses
Digital Communication	Very Frequently	32	21.05
	Frequently	42	27.63
	Somewhat Frequently	45	29.61
	Somewhat Infrequently	19	12.50
	Infrequently	5	3.29
	Very Infrequently	9	5.92
	Total	152	100.00
Digital Literacy	Very Frequently	28	18.67
	Frequently	53	35.33
	Somewhat Frequently	36	24.00
	Somewhat Infrequently	15	10.00
	Infrequently	10	6.67
	Very Infrequently	8	5.33
	Total	150	100.00
Digital Access	Very Frequently	20	13.16
	Frequently	39	25.66
	Somewhat Frequently	41	26.97
	Somewhat Infrequently	27	17.76
	Infrequently	14	9.21
	Very Infrequently	11	7.24
	Total	152	100.00
Digital Security	Very Frequently	12	7.95
	Frequently	24	15.89
	Somewhat Frequently	40	26.49
	Somewhat Infrequently	36	23.84
	Infrequently	24	15.89
	Very Infrequently	15	9.93
	Total	151	100.00

Table 4 (continued)

Frequency of Digital Citizenship Instruction by Tenet in High Schools With a One-to-One Technology Program

Digital Citizenship Tenet	Likert-Scale Response	N	% of responses
Digital Etiquette	Very Frequently	12	7.89
	Frequently	49	32.24
	Somewhat Frequently	39	25.66
	Somewhat Infrequently	30	19.74
	Infrequently	14	9.21
	Very Infrequently	8	5.26
	Total	152	100.00
Digital Rights and Responsibilities	Very Frequently	11	7.24
	Frequently	39	25.66
	Somewhat Frequently	37	24.34
	Somewhat Infrequently	27	17.76
	Infrequently	24	15.79
	Very Infrequently	14	9.21
	Total	152	100.00
Digital Law	Very Frequently	5	3.29
	Frequently	28	18.42
	Somewhat Frequently	35	23.03
	Somewhat Infrequently	41	26.97
	Infrequently	22	14.47
	Very Infrequently	21	13.82
	Total	152	100.00
Digital Commerce	Very Frequently	4	2.63
	Frequently	6	3.95
	Somewhat Frequently	19	12.5
	Somewhat Infrequently	46	30.26
	Infrequently	45	29.61
	Very Infrequently	32	21.05
	Total	152	100.00
Digital Health and Wellness	Very Frequently	3	1.97
	Frequently	8	5.26
	Somewhat Frequently	18	11.84
	Somewhat Infrequently	45	29.61
	Infrequently	38	25.00
	Very Infrequently	10	26.32
	Total	152	100.00

The data indicated a lack of consistency in digital citizenship instruction. More importantly, there was a lack of consistency with teachers' responses to the questions, making it clear that participants were unsure of or inconsistent in their instruction of digital citizenship tenets. There could be multiple explanations for the inconsistent frequency of digital citizenship instruction among the tenets and two possibilities will be posited here. One explanation could be that schools need to do a better job of formalizing instruction. The second possible explanation could be schools recognized their limited time and focused that resource on the areas perceived to be the most pertinent. If the latter were the case, knowing if different grade levels found it necessary to emphasize digital citizenship would provide further understanding of the use of time.

Table 5

Summary of Frequency of Digital Citizenship Instruction by Tenet in High Schools With a One-to-One Technology Program

Digital Citizenship Tenet	% of Responses *Very Frequently* and *Frequently*	% of Responses *Very Frequently*, *Frequently*, and *Somewhat Frequently*
Digital Communication	46.68	78.29
Digital Literacy	54.00	78.00
Digital Access	38.82	65.79
Digital Etiquette	40.13	65.79
Digital Rights and Responsibilities	32.89	57.24
Digital Security	23.84	50.33
Digital Law	21.71	44.74
Digital Health and Wellness	7.24	19.08
Digital Commerce	6.58	19.08

Frequency of Digital Citizenship Instruction by Grade Level

The frequency of instruction for digital citizenship at the different high school grade levels was examined to determine if there was any particular grade where teachers tended to address digital citizenship more frequently. Teachers answered this question on their perception of the frequency of digital citizenship instruction provided at each grade level. A respondent did not have to teach that grade level to provide a response; therefore responses were not always based on firsthand knowledge. As stated previously, the majority of responses for the individual tenets were in the *somewhat frequently* to *infrequently* categories for seven of the nine tenets.

The grade level where digital citizenship instruction was perceived to be most frequent was ninth grade, with 29.34% of responses as *very frequently* and *frequently* and 61.34% of responses as *very frequently*, *frequently*, and *somewhat frequently* (see Table 6). Overall, the responses were relatively similar when examining the sum of responses in *very frequently* and *frequently*. The difference between the highest, ninth grade, 29.34%, and lowest, 12th grade, 20.83%, was only 8.51%. Adding together the responses of *very frequently*, *frequently*, and *somewhat frequently*, the differences became even less. There was only 3.01% difference between the highest, ninth grade, 61.34%, and the two lowest, 10th and 12th grades, 58.33%. The consistency of responses implied one-to-one high schools were not targeting any specific grade level with digital citizenship education. It also implied no real emphasis in general as the responses basically stated digital citizenship was addressed, but without priority or purpose.

Table 6

Frequency of Digital Citizenship Instruction by Grade Level with Summaries

Grade Level	Likert-Scale Response	*N*	% of responses	% of Responses *Very Frequently* and *Frequently*	% of Responses *Very Frequently*, *Frequently*, and *Somewhat Frequently*
9th Grade	Very Frequently	7	4.67	29.34	61.34
	Frequently	37	24.67		
	Somewhat Frequently	48	32.00		
	Somewhat Infrequently	29	19.33		
	Infrequently	2	13.33		
	Very Infrequently	9	6.00		
	Total	150	100.00		
10th Grade	Very Frequently	5	3.47	25.00	58.33
	Frequently	31	21.53		
	Somewhat Frequently	48	33.33		
	Somewhat Infrequently	32	22.22		
	Infrequently	19	13.19		
	Very Infrequently	9	6.25		
	Total	144	100.00		
11th Grade	Very Frequently	10	6.9	21.38	60.69
	Frequently	21	14.48		
	Somewhat Frequently	57	39.31		
	Somewhat Infrequently	32	22.07		
	Infrequently	16	11.03		
	Very Infrequently	9	6.21		
	Total	145	100.00		
12th Grade	Very Frequently	11	7.64	20.83	58.33
	Frequently	19	13.19		
	Somewhat Frequently	54	37.50		
	Somewhat Infrequently	33	22.92		
	Infrequently	19	13.19		
	Very Infrequently	8	5.56		
	Total	144	100.00		

Disaggregated Teacher Perceptions on Digital Citizenship

Overall teacher perceptions regarding digital citizenship were observed to be important. Also, most schools lacked a formal curriculum or time to address digital citizenship. This corresponded to a discrepancy where the perceived importance of digital citizenship instruction did not translate to a high frequency of instruction, especially with regard to digital rights and responsibilities, digital security, digital commerce, and digital health and wellness. To provide further insight into digital citizenship instruction in schools, the teacher demographics of age, gender, and primary grade level taught were studied for significant differences. Each of these demographic variables was examined by their mean value for teacher perceptions regarding the nine tenets of digital citizenship, with gender and primary grade level taught examined for percent of responses in the different categories. In this way, the research was able to examine specific considerations such as if teachers aged 20-29 perceived digital commerce differently than those teachers aged 60 or greater. The results of this inspection of digital citizenship perceptions were presented below.

Teacher perceptions by age. Research Question 3 sought to determine if there was a difference in teacher perceptions by age of the teachers. Even though teachers found digital citizenship to be important, if differences existed between teachers grouped by age, further insight could be gleaned from any significant differences that might arise.

Ages were segregated into 10-year increments as follows: 20-29, 30-39, 40-49, 50-59, and 60 or greater. All groups had 30 or more participants with the exception of the 60 or greater group having only 10. Among the different age groups, all tenets were viewed as being important, with means ranging from 1.43 to 2.52 (see Table 7). A one-way ANOVA was conducted to examine whether there was a significant difference in perceptions based on teachers' age arranged in order of increasing *p* values (see Table 8).

Table 7

Digital Citizenship Perceptions by Age of Teachers

Digital Citizenship Tenet	Age	*N*	Mean	Std. Deviation
Digital Etiquette	20-29 years old	31	1.97	0.67
	30-39 years old	41	1.82	0.45
	40-49 years old	39	2.05	0.70
	50-59 years old	38	1.99	1.01
	60 years old or greater	10	1.83	0.78
	Total	159	1.95	0.73
Digital Communication	20-29 years old	30	2.14	0.61
	30-39 years old	38	1.98	0.61
	40-49 years old	39	2.01	0.67
	50-59 years old	38	1.89	1.03
	60 years old or greater	10	2.03	1.23
	Total	155	2.00	0.79
Digital Literacy	20-29 years old	31	1.68	0.45
	30-39 years old	41	1.60	0.44
	40-49 years old	40	1.77	0.68
	50-59 years old	38	1.64	0.84
	60 years old or greater	11	1.57	0.54
	Total	161	1.66	0.62
Digital Access	20-29 years old	29	2.03	0.51
	30-39 years old	41	1.95	0.60
	40-49 years old	40	2.16	0.67
	50-59 years old	38	1.95	0.95
	60 years old or greater	11	1.64	0.54
	Total	159	2.00	0.70

Table 7 (continued)

Digital Citizenship Tenets by Age of Teachers

Digital Citizenship Tenet	Age	*N*	Mean	Std. Deviation
Digital Commerce	20-29 years old	31	2.44	0.84
	30-39 years old	40	2.44	0.89
	40-49 years old	40	2.20	0.68
	50-59 years old	38	2.16	1.12
	60 years old or greater	11	2.02	0.72
	Total	160	2.28	0.88
Digital Rights and Responsibilities	20-29 years old	31	1.77	0.70
	30-39 years old	39	1.49	0.41
	40-49 years old	39	1.76	0.61
	50-59 years old	38	1.62	0.89
	60 years old or greater	11	1.43	0.65
	Total	158	1.64	0.67
Digital Law	20-29 years old	31	2.02	0.81
	30-39 years old	42	1.84	0.57
	40-49 years old	41	1.95	0.68
	50-59 years old	39	1.82	0.98
	60 years old or greater	11	1.66	0.72
	Total	164	1.88	0.76
Digital Health and Wellness	20-29 years old	31	2.52	0.90
	30-39 years old	41	2.20	0.75
	40-49 years old	41	2.35	0.73
	50-59 years old	39	2.22	1.17
	60 years old or greater	10	1.83	0.82
	Total	162	2.28	0.90
Digital Security	20-29 years old	31	2.02	0.75
	30-39 years old	41	1.91	0.57
	40-49 years old	41	1.91	0.65
	50-59 years old	38	1.86	0.94
	60 years old or greater	10	1.58	0.76
	Total	161	1.90	0.73

There was not a significant difference between teacher perceptions regarding digital citizenship among different age groups at the $p < .05$ level (see Table 8). The lowest value showing differences was in digital health and wellness at $p = .23$. While there was not a significant difference between any groups, in digital health and wellness the 60 or greater age group had a mean value of 1.83 whereas the 20-29 age group had a mean value of 2.52. This showed older teachers placed more emphasis on the physical impact of technology than the youngest teacher group.

There was little difference among the various ages of teachers, implying, yet again that teachers tended to view digital citizenship consistently regardless of other variables. Miles (2014) and Suppo (2013) argued that technology competencies, including digital citizenship instruction, should be provided to both current and upcoming teachers. If this had begun to take place at the college level, a significant difference would have been expected between younger and older teachers. A natural assumption would be that younger teachers have either been more prepared for or are more aware of digital citizenship; however this research did not support that assumption. When comparing teachers at various ages, the differences were minimal. Teachers 60 years old or greater did tend to rate the digital citizenship tenets as more important than other age groups in all but two areas. It would have been interesting to see if significant differences would have developed had there been greater participation among teachers 60 years old or greater.

Table 8

One-Way ANOVA of Digital Citizenship Perceptions by Age of Teachers

	Source	*df*	*SS*	*MS*	*F*	*p*
Digital Health and Wellness	Between Groups	4	4.52	1.13	1.41	.23
	Within Groups	157	126.20	.80		
	Total	161	130.72			
Digital Access	Between Groups	4	2.73	.68	1.39	.24
	Within Groups	154	75.58	.49		
	Total	158	78.31			
Digital Rights and Responsibilities	Between Groups	4	2.41	.60	1.35	.25
	Within Groups	153	68.52	.45		
	Total	157	70.94			
Digital Commerce	Between Groups	4	3.37	.84	1.08	.37
	Within Groups	155	120.94	.78		
	Total	159	124.31			
Digital Security	Between Groups	4	1.56	.39	.72	.58
	Within Groups	156	84.50	.54		
	Total	160	86.06			
Digital Law	Between Groups	4	1.55	.39	.66	.62
	Within Groups	159	93.42	.59		
	Total	163	94.98			
Digital Etiquette	Between Groups	4	1.27	.32	.59	.67
	Within Groups	154	83.40	.54		
	Total	158	84.67			
Digital Literacy	Between Groups	4	.74	.18	.48	.75
	Within Groups	156	60.40	.39		
	Total	160	61.14			
Digital Communication	Between Groups	4	1.05	.26	.41	.80
	Within Groups	150	95.08	.63		
	Total	154	96.12			

Teacher perceptions by gender. The question of whether gender impacts teachers' perceptions of the tenets of digital citizenship was the focus of the second part of Research Question 3. An important point to note when studying gender was that it separated teachers into two groups, 49 males and 114 females, whereas the other two demographic factors split teachers into four and five groups. This allowed for the possibility of a difference being significant even though it was smaller than changes observed in the other two demographic variables.

Gender difference was the only variable that exhibited significant differences in teacher perceptions regarding two tenets of digital citizenship having a significant difference at the $p < .05$ level. In both cases, females perceived the tenet was more important than males. The two tenets were digital communication, $p = .015$, and digital etiquette, $p = .025$ (see Table 9). None of the other tenets displayed a significant difference in responses. The response rates for these two tenets were Numbers 5 and 6 when ranked from highest to lowest response in the *very frequently*, *frequently*, and *somewhat frequently* categories. The difference in responses for *very frequently* between males and females was 9.28% for digital communication and 6.66% for digital etiquette, with females responding higher in both cases (see Table 10). However, when the responses in the *very frequently*, *frequently*, and *somewhat frequently* categories were compared, the differences were lessened for digital communication, 6.26%, and digital etiquette, 6.04%, with females responding higher in both cases (see Table 11). While digital communication and digital etiquette showed a significant difference, it is remarkable that so few significant differences were observed when such a small mean difference made such a big impact.

Table 9

One-Way ANOVA of Teacher Perceptions by Gender of Teachers

	Source	*df*	*SS*	*MS*	*F*	*p*
Digital Communication	Between Groups	1	3.67	3.67	6.06	.015
	Within Groups	152	91.95	0.61		
	Total	153	95.62			
Digital Etiquette	Between Groups	1	2.67	2.67	5.14	.025
	Within Groups	156	81.18	0.52		
	Total	157	83.86			
Digital Literacy	Between Groups	1	0.81	0.81	2.11	.15
	Within Groups	158	60.26	0.38		
	Total	159	61.07			
Digital Commerce	Between Groups	1	1.17	1.17	1.50	.22
	Within Groups	157	122.68	0.78		
	Total	158	123.86			
Digital Law	Between Groups	1	0.45	0.45	0.77	.38
	Within Groups	161	94.51	0.59		
	Total	162	94.96			
Digital Rights and Responsibilities	Between Groups	1	0.32	0.32	0.71	.40
	Within Groups	155	70.72	0.46		
	Total	156	71.04			
Digital Security	Between Groups	1	0.07	0.07	0.12	.73
	Within Groups	158	85.95	0.54		
	Total	159	86.01			
Digital Health and Wellness	Between Groups	1	0.07	0.07	0.08	.77
	Within Groups	159	130.28	0.82		
	Total	160	130.35			
Digital Access	Between Groups	1	0.01	0.01	0.02	.90
	Within Groups	156	77.74	0.50		
	Total	157	77.75			

Table 10

Digital Citizenship Perceptions by Gender of Teachers

		Female		Male	
Digital Citizenship Tenet	Likert-Scale Response	*N*	% of responses	*N*	% of responses
Digital Literacy	Very Important	244	53.86	85	43.37
	Important	156	34.44	82	41.84
	Somewhat Important	44	9.71	21	10.71
	Somewhat Unimportant	4	.88	4	2.04
	Unimportant	1	.22	4	2.04
	Very Unimportant	4	.88	0	.00
	Total	453	100.00	196	100.00
Digital Rights and Responsibilities	Very Important	264	58.54	100	51.28
	Important	139	30.82	63	32.31
	Somewhat Important	30	6.65	21	10.77
	Somewhat Unimportant	5	1.11	3	1.54
	Unimportant	4	.89	4	2.05
	Very Unimportant	9	2.00	4	2.05
	Total	451	100.00	195	100.00
Digital Security	Very Important	190	41.85	73	37.44
	Important	165	36.34	79	40.51
	Somewhat Important	76	16.74	31	15.90
	Somewhat Unimportant	14	3.08	6	3.08
	Unimportant	3	.66	3	1.54
	Very Unimportant	6	1.32	3	1.54
	Total	454	100.00	195	100.00
Digital Access	Very Important	164	36.36	72	36.73
	Important	168	37.25	72	36.73
	Somewhat Important	94	20.84	38	19.39
	Somewhat Unimportant	15	3.33	7	3.57
	Unimportant	3	.67	6	3.05
	Very Unimportant	7	1.55	1	.51
	Total	451	100.00	196	100.00
Digital Etiquette	Very Important	197	43.58	72	36.92
	Important	169	37.39	63	32.31
	Somewhat Important	60	13.27	37	18.97
	Somewhat Unimportant	10	2.21	11	5.64
	Unimportant	6	1.33	4	2.05
	Very Unimportant	10	2.21	8	4.10
	Total	452	100.00	195	100.00

Table 10 (continued)

Digital Citizenship Perceptions by Gender of Teachers

		Female		Male	
Digital Citizenship Tenet	Likert-Scale Response	*N*	% of responses	*N*	% of responses
Digital Communication	Very Important	194	43.30	66	34.02
	Important	144	32.14	61	31.44
	Somewhat Important	78	17.41	41	21.13
	Somewhat Unimportant	15	3.35	11	5.67
	Unimportant	9	2.01	5	2.58
	Very Unimportant	8	1.79	10	5.15
	Total	448	100.00	194	100.00
Digital Law	Very Important	221	48.68	84	42.86
	Important	149	32.82	65	33.16
	Somewhat Important	51	11.23	29	14.80
	Somewhat Unimportant	11	2.42	9	4.59
	Unimportant	8	1.76	6	3.06
	Very Unimportant	14	3.08	3	1.53
	Total	454	100.00	196	100.00
Digital Health and Wellness	Very Important	159	34.95	63	32.31
	Important	128	28.13	51	26.15
	Somewhat Important	104	22.86	55	28.21
	Somewhat Unimportant	33	7.25	16	8.21
	Unimportant	15	3.30	6	3.08
	Very Unimportant	16	3.52	4	2.05
	Total	455	100.00	195	100.00
Digital Commerce	Very Important	128	28.19	46	23.59
	Important	130	28.63	64	32.82
	Somewhat Important	124	27.31	42	21.54
	Somewhat Unimportant	44	9.69	21	10.77
	Unimportant	13	2.86	18	9.23
	Very Unimportant	15	3.30	4	2.05
	Total	454	100.00	195	100.00

Overall, in comparing the percentage of responses in the *very frequently*, *frequently*, and *somewhat frequently* categories women responded above 90% for seven of the nine tenets and men responded above 90% for four of the nine tenets. All of the women's response percentages were above 84% while men scored eight of the nine tenets above 80% with digital commerce, 77.95%, lower (see Table 11). Since females constituted a little over two thirds of the participants, the overall study responses more closely represent this demographic group.

Table 11

Summary of Digital Citizenship Perceptions by Gender of Teachers

	% of Responses *Very Frequently* and *Frequently*		% of Responses *Very Frequently*, *Frequently*, and *Somewhat Frequently*	
Digital Citizenship Tenet	Female	Male	Female	Male
Digital Literacy	88.30	85.20	98.01	95.92
Digital Rights and Responsibilities	89.36	83.59	96.01	94.36
Digital Security	78.19	77.95	94.93	93.85
Digital Access	73.61	73.47	94.46	92.86
Digital Etiquette	80.97	69.23	94.25	88.21
Digital Communication	75.45	65.46	92.86	86.60
Digital Law	81.50	76.02	92.73	90.82
Digital Health and Wellness	63.08	58.46	85.93	86.67
Digital Commerce	56.83	56.41	84.14	77.95

It was difficult to determine the importance of these differences from this research beyond typical stereotypes. Overall, results indicated that digital citizenship tenets were more important to female respondents than to their male colleagues. A significant difference was found in the mean differences of digital communication and digital etiquette. Digital commerce showed a similar difference when looking at the percent of responses in category sums but there was more variation throughout the responses of digital commerce. Perceptions regarding digital literacy, digital law, digital rights and responsibilities, digital security, digital health and wellness, and digital access continued the theme of homogeneity prevalent throughout this research. While significant differences were found in this variable, those differences seemed to be less pronounced than those found in age range. This again points to the different group sizes having a stronger impact.

Teacher perceptions by grade level. Was there a difference in teacher perceptions regarding digital citizenship when the primary grade level taught by the teacher was different? Typical high school ages range from 14 to 18 years old. It would not have been surprising to find a difference among teachers' perceptions based on their primary grade level taught. Freshmen students' immaturity balanced against seniors preparing to enter college or the work force could produce different needs for digital citizenship education. As was seen earlier, even this variable did not account for much variety in responses.

Teachers identified the grade they primarily taught as ninth, 10th, 11th, or 12th grade. To provide perspective, when the number of participants in each demographic was averaged for the nine tenets, the number of participants was 50, 43, 36, and 22 respectively. These items displayed no significant differences at the $p < .05$ level: digital security, $p = .25$; digital access, $p = .30$; digital health and wellness, $p = .37$; digital etiquette, $p = .38$; digital rights and responsibilities, $p = .38$; digital commerce, $p = .53$; digital law, $p = .66$; digital communication, $p = .80$; and digital literacy, $p = .94$ (see Table 12). No significant difference was observed among any digital citizenship tenets based on the primary grade level taught by teachers. The lowest p value was found for digital security, .25, and the highest was digital literacy at .94. Teachers remained relatively constant with previous data regarding their perceptions on digital citizenship.

Table 12

One-Way ANOVA of Teacher Perceptions by Primary Grade Level Taught by Teachers

	Source	*df*	*SS*	*MS*	*F*	*P*
Digital Security	Between Groups	3	2.28	0.76	1.39	.25
	Within Groups	149	81.53	0.55		
	Total	152	83.81			
Digital Access	Between Groups	3	1.83	0.61	1.23	.30
	Within Groups	147	72.71	0.50		
	Total	150	74.54			
Digital Health and Wellness	Between Groups	3	2.60	0.87	1.05	.37
	Within Groups	150	124.09	0.83		
	Total	153	126.69			
Digital Etiquette	Between Groups	3	1.70	0.57	1.04	.38
	Within Groups	147	79.82	0.54		
	Total	150	81.52			
Digital Rights and Responsibilities	Between Groups	3	1.45	0.48	1.04	.38
	Within Groups	147	68.04	0.46		
	Total	150	69.48			
Digital Commerce	Between Groups	3	1.80	0.60	0.74	.53
	Within Groups	148	119.16	0.81		
	Total	151	120.95			
Digital Law	Between Groups	3	0.96	0.32	0.53	.66
	Within Groups	152	91.73	0.60		
	Total	155	92.68			
Digital Communication	Between Groups	3	0.65	0.22	0.34	.80
	Within Groups	144	92.54	0.64		
	Total	147	93.19			
Digital Literacy	Between Groups	3	0.16	0.05	0.13	.94
	Within Groups	149	58.47	0.39		
	Total	152	58.63			

Overall, 12th-grade teachers' responses showed greater importance placed on digital citizenship than the other three grade level groups. This was surprising as ninth grade was assumed to be the age where these values would be necessary but responses placed the least importance on digital citizenship than any other grade. Teachers' responses of those who primarily taught 12th grade in the *very important*, *important*, and *somewhat important* categories showed eight of the nine tenets were above 90%. In contrast, ninth-grade teachers' responses only showed five of the nine tenets were above 90% and digital commerce, 79.91%, was the only category for any of the four demographics below 80%. Even though the difference was not significant, this would be an interesting component for further research. Of note, when responses were examined based on this demographic, all of the responses for digital literacy were marked in the *very important*, *important*, and *somewhat important* categories by 11th-grade teachers (see Table 13).

Table 13

Descriptive Statistics of Digital Citizenship Perceptions by Primary Grade Level Taught by Teachers

Digital Citizenship Tenet	Likert-Scale Response	9th Grade		10th Grade		11th Grade		12th Grade	
		N	% of responses	*N*	% of responses	*N*	% of responses	*N*	% of responses
Digital Literacy	Very Important	105	50.97	93	52.84	66	44.59	50	54.95
	Important	75	36.41	61	34.66	64	43.24	32	35.16
	Somewhat Important	17	8.25	17	9.66	18	12.16	6	6.59
	Somewhat Unimportant	5	2.43	1	.57	0	.00	2	2.20
	Unimportant	4	1.94	0	.00	0	.00	1	1.10
	Very Unimportant	0	.00	4	2.27	0	.00	0	.00
	Total	206	100.00	176	100.00	148	100.00	91	100.00

Table 13 (continued)

Descriptive Statistics of Digital Citizenship Perceptions by Primary Grade Level Taught by Teachers

Digital Citizenship Tenet	Likert-Scale Response	9th Grade		10th Grade		11th Grade		12th Grade	
		N	% of responses	*N*	% of responses	*N*	% of responses	*N*	% of responses
Digital Rights and Responsibilities	Very Important	99	48.53	97	55.11	87	59.18	63	68.48
	Important	78	38.24	57	32.39	39	26.53	21	22.83
	Somewhat Important	15	7.35	13	7.39	15	10.20	6	6.52
	Somewhat Unimportant	3	1.47	2	1.14	2	1.36	1	1.09
	Unimportant	4	1.96	2	1.14	1	.68	1	1.09
	Very Unimportant	5	2.45	5	2.84	3	2.04	0	.00
	Total	204	100.00	176	100.00	147	100.00	92	100.00
Digital Security	Very Important	75	36.41	68	38.86	59	39.86	44	47.83
	Important	75	36.41	74	42.29	56	37.84	34	36.96
	Somewhat Important	38	18.45	25	14.29	30	20.27	10	10.87
	Somewhat Unimportant	9	4.37	3	1.71	2	1.35	4	4.35
	Unimportant	6	2.91	0	.00	0	.00	0	.00
	Very Unimportant	3	1.46	5	2.86	1	.68	0	.00
	Total	206	100.00	175	100.00	148	100.00	92	100.00
Digital Access	Very Important	81	39.13	57	32.76	46	31.08	43	47.78
	Important	79	38.16	74	42.53	55	37.16	26	28.89
	Somewhat Important	34	16.43	30	17.24	39	26.35	18	20.00
	Somewhat Unimportant	9	4.35	7	4.02	3	2.03	2	2.22
	Unimportant	3	1.45	2	1.15	2	1.35	1	1.11
	Very Unimportant	1	.48	4	2.30	3	2.03	0	.00
	Total	207	100.00	174	100.00	148	100.00	90	100.00

Table 13 (continued)

Descriptive Statistics of Digital Citizenship Perceptions by Primary Grade Level Taught by Teachers

Digital Citizenship Tenet	Likert-Scale Response	9th Grade		10th Grade		11th Grade		12th Grade	
		N	% of responses	*N*	% of responses	*N*	% of responses	*N*	% of responses
Digital Etiquette	Very Important	83	40.29	74	42.29	52	35.62	43	46.74
	Important	66	32.04	66	37.71	61	41.78	32	34.78
	Somewhat Important	30	14.56	26	14.86	26	17.81	11	11.96
	Somewhat Unimportant	13	6.31	3	1.71	2	1.37	3	3.26
	Unimportant	6	2.91	1	.57	2	1.37	1	1.09
	Very Unimportant	8	3.88	5	2.86	3	2.05	2	2.17
	Total	206	100.00	175	100.00	146	100.00	92	100.00
Digital Law	Very Important	92	44.66	77	43.75	66	44.59	53	57.61
	Important	69	33.50	66	37.50	47	31.76	25	27.17
	Somewhat Important	28	13.59	17	9.66	25	16.89	8	8.70
	Somewhat Unimportant	7	3.40	6	3.41	4	2.70	2	2.17
	Unimportant	4	1.94	5	2.84	2	1.35	2	2.17
	Very Unimportant	6	2.91	5	2.84	4	2.70	2	2.17
	Total	206	100.00	176	100.00	148	100.00	92	100.00
Digital Communication	Very Important	82	40.59	62	35.43	56	37.84	43	47.78
	Important	61	30.20	63	36.00	49	33.11	27	30.00
	Somewhat Important	36	17.82	34	19.43	31	20.95	13	14.44
	Somewhat Unimportant	10	4.95	7	4.00	5	3.38	4	4.44
	Unimportant	6	2.97	4	2.29	3	2.03	1	1.11
	Very Unimportant	7	3.47	5	2.86	4	2.70	2	2.22
	Total	202	100.00	175	100.00	148	100.00	90	100.00

Table 13 (continued)

Descriptive Statistics of Digital Citizenship Perceptions by Primary Grade Level Taught by Teachers

Digital Citizenship Tenet	Likert-Scale Response	9th Grade		10th Grade		11th Grade		12th Grade	
		N	% of responses	*N*	% of responses	*N*	% of responses	*N*	% of responses
Digital Health and Wellness	Very Important	68	32.85	58	33.14	46	31.08	35	38.04
	Important	50	24.15	58	33.14	36	24.32	28	30.43
	Somewhat Important	54	26.09	38	21.71	42	28.38	20	21.74
	Somewhat Unimportant	16	7.73	15	8.57	12	8.11	5	5.43
	Unimportant	12	5.80	1	.57	5	3.38	3	3.26
	Very Unimportant	7	3.38	5	2.86	7	4.73	1	1.09
	Total	207	100.00	175	100.00	148	100.00	92	100.00
Digital Commerce	Very Important	51	24.64	39	22.16	37	25.17	33	36.26
	Important	68	32.85	59	33.52	41	27.89	22	24.18
	Somewhat Important	46	22.22	49	27.84	43	29.25	23	25.27
	Somewhat Unimportant	23	11.11	12	6.82	17	11.56	10	10.99
	Unimportant	13	6.28	9	5.11	5	3.40	2	2.20
	Very Unimportant	6	2.90	8	4.55	4	2.72	1	1.10
	Total	207	100.00	176	100.00	147	100.00	91	100.00

Even though there were some areas where differences existed, teachers’ responses at each of the grade levels were fairly consistent. With teachers tending to have more than one class preparation that may have fallen across multiple grades, it is possible this similarity was simply due to a lack of teachers who taught one grade level exclusively, but simply primarily. Even with that, it was most likely a result of the inherent regularity found throughout the study.

Summary

As this study examined both teacher perceptions and frequency of teaching digital citizenship, there was little variation observed in general. The only significant difference observed was among male and female teachers with regard to their perceptions on digital communication and digital etiquette where females perceived these tenets were significantly more important than males.

Research Question 1 examined the percentage of responses in each category for teachers' perceptions of digital citizenship in a holistic manner. Teachers in this study perceived digital citizenship was *very important*, *important*, or *somewhat important* at least 82.60% of the time across the nine tenets, with digital literacy, 97.43%, and digital rights and responsibilities, 95.59%, having the highest percentage of responses in these categories.

Research Question 2 focused on looked at what components of digital citizenship were addressed. One facet of this question was to look at differences in philosophy of implementing digital citizenship with regard to a formal or informal program. It was determined the majority of respondents were not teaching in schools offering a formal digital citizenship curriculum, although this did not necessarily correspond to fewer schools with a formal curriculum.

Another aspect of Research Question 2 ascertained what components of digital citizenship were addressed by teachers based on the frequency of instruction. When examined for responses in the *very frequently*, *frequently*, and *somewhat frequently* categories, six of the nine tenets had over 50% of the responses in these categories with digital communication, 78.29%, and digital literacy, 78.00%, the most frequent. Three of the nine tenets fell below 50% with two tenets, digital health and wellness and digital commerce, both at 19.08%, having low frequency.

The last aspect of Research Question 2 sought to determine how frequently digital citizenship was taught at each grade level. The results showed very little variation between grade levels with responses in the *very frequently*, *frequently*, and *somewhat frequently* categories ranging from 61.34% to 58.33%. Although the majority of responses were in the top three categories, it was a small majority.

Research Question 3 examined teacher perceptions and sought to determine if differences existed when the group was broken down by age, gender, and primary grade level taught. No significant difference was observed between the different age groups although teachers aged 60 or older tended to perceive the tenets of digital citizenship as more important. Gender played a role in the teachers' perceptions for digital communication and digital etiquette. Female teachers perceived these two tenets to be significantly more important than did male teachers. While no other significant difference was observed it is nonetheless interesting that females responded that each tenet of digital citizenship was more important than was indicated by males. The last demographic variable examined was the primary grade level taught by teachers and its impact on teacher perceptions. In this as well, there were no significant differences observed when teachers primarily taught different grade levels. It was observed that teachers who noted their primary grade level taught as 12th grade stated each tenet of digital citizenship was more important than teachers who primarily taught ninth, 10th, or 11th grade.

The findings of this research showed teachers in different schools, of all ages, gender, and grade level assignments tended to perceive digital citizenship similarly and to teach it with similar frequency. All teachers responded that digital citizenship was important, with the majority of responses indicating each tenet was either *very important* or *important*. While a significant difference existed with females perceiving digital communication and digital etiquette as more important, males still saw those tenets as being important. General tendencies were observed with females seeing digital citizenship as more important than males and 12th-grade teachers responding in kind when compared to the other grade level teachers. The conclusions and implications of these finding will be further addressed in Chapter Five.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

A foundational component of this research is the concept that students must develop citizenship in both the real and virtual world (Dubas et al., 2014; Ohler, 2011; Ribble, 2011). In order for students to develop good digital citizenship skills, schools must recognize this need and begin to develop instruction that promotes civility and objectivity toward online information (Gozálvez, 2011; Ohler, 2011; Ribble, 2011). With this academic backdrop, the research sought to examine whether teachers in high schools in Missouri with a one-to-one technology program perceived digital citizenship was important and whether the importance translated into the curriculum in those schools. This research examined schools with a one-to-one program to learn from those teachers immersed in a technologically rich teaching environment. The following research questions were used to guide the study:

1. What elements of digital citizenship do teachers in a one-to-one school environment perceive to be important?
2. What elements of digital citizenship do teachers in a one-to-one school environment address in their school?
3. What role does age, gender, or grade level taught have in impacting teachers' perceptions regarding digital citizenship?

Teachers perceived digital citizenship is important. Digital communication, digital literacy, digital access, and digital etiquette were components of digital citizenship most frequently taught. However, all four had the majority of responses in the second and third categories of being taught *frequently* or *somewhat frequently*. This finding supported Daniels et al.'s (2013) assertion that schools often provide technology but do not always make well-informed, systemic changes to pedagogy. This pedagogy deficiency was especially noticeable as digital commerce and digital health and wellness were taught infrequently and the minority of teachers indicated a formally written digital citizenship curriculum was used in their district. Finally, only one demographic factor showed a significant difference among teacher beliefs. Gender was found to be a significant factor in the teaching of digital communication and digital etiquette.

Conclusions

The purpose of the first research question was to provide a general overview of teachers' digital citizenship perceptions in a high school with a one-to-one technology program. The research showed teachers perceived all tenets of digital citizenship as being important. Digital rights and responsibilities and digital literacy were the components teachers viewed to be most important of all nine.

A possible reason digital rights and responsibility rose to the top is the nature of personal responsibility it imparts to the student. A natural concern of teachers is classroom management. The struggles of adding one more electronic distraction in the form of a one-to-one technology program could amplify the need for digital rights and responsibility, especially as Seemiller (2017) confirmed many students use their technology for nonacademic purposes. Digital literacy may have risen to the top out of sheer need to imbue academically rigorous instruction using technology. Teachers must bring all students up to a base level of competency to provide sufficient instruction. Hargittai (2010) pointed out there are multiple levels of technological competency among students even when the students are fairly homogeneous. The two tenets perceived to be least important by teachers were digital health and wellness and digital commerce. With limited class time available, teachers' perceptions of the long-term impact of technology misuse were less pertinent. Similarly, teachers rarely apply the skill of shopping online intelligently during lessons. This would imply teachers' perceptions of importance could be traced back to the practicality of what was taught in class.

Even more telling with regard to what was happening in the classroom with digital citizenship was garnering teachers' responses of how frequently digital citizenship was taught in the classroom. Few teachers were in schools that found it worth the time to develop a specific class, course, or even curriculum to incorporate digital citizenship during the school day. Very few teachers stated their school had a specific class that all students were required to take. Equally, few teachers indicated their school had a formal curriculum. Most teachers indicated that more often digital citizenship instruction was addressed informally, not as a curricular objective. The consolation was that only a small percentage of respondents stated they did not address digital citizenship at all in their school. These findings support Daniels et al.'s (2013) assertion that schools rarely take the time to evaluate their vision or research with regard to technology, which inhibits their ability to make effective systemic changes.

Research Question 2 examined the specific digital citizenship tenets schools addressed. This question was measured by looking at how often the tenets were addressed in schools, referred to as frequency, as well as a more general look at frequency by grade level. The two tenets addressed most frequently were digital communication and digital literacy. As digital communication focuses on such things as cell phone use in class, it is unsurprising this tenet would receive significant attention.

Digital communication and digital literacy are tenets that need frequent attention by teachers for the sake of classroom management and instruction respectively. However, it was surprising digital law was not rated higher as the tenet addresses cheating and plagiarism, which is a frequent and troublesome classroom issue (D. L. R. Jones, 2011; Ma et al., 2008; Nedelcu & Ulrich, 2013). Plagiarism may be addressed so commonly its development as a piece of digital citizenship may have been overlooked.

Considering most teachers do not have formal curriculum to use when teaching digital citizenship and its instruction varied so widely, two inferences can be drawn. First, teachers address what is pertinent to their personal classroom when a formal curriculum is lacking. Second, when a curriculum is developed, it addresses issues that primarily impact the academic environment as opposed to items like online purchasing and staying up late at night on electronics.

The frequency of digital citizenship instruction when disaggregated by grade level showed little variation. This would imply some consistency with responses as well as an attitude that digital citizenship was addressed a little less than somewhat frequently in general.

Research Question 3 looked to see if there were any differences in teacher perceptions based on the demographic variables of age, gender, or grade level taught. Starting with age, there was no significant difference in perception. This is not surprising as it agrees with Miles' (2014) research, which showed little difference in technology integration in teachers with various years of experience. It also aligns with McRae (2012), where it was determined veteran teachers may be riskier in their instructional techniques including technology integration.

When gender was examined, there again was no significant difference in seven of the nine tenets, but digital communication and digital etiquette did show significant differences. One possible reason for the significance in differences was due to the size of the demographic groups allowing for greater opportunity for significance. As to why there was a difference, further research would be needed to determine the reasoning.

The third and last demographic factor examined was the primary grade level taught by the respondent. Again, no significant difference was observed in this demographic factor. Seeing no significant difference in this demographic area shows teachers at all grade levels displayed relatively consistent perceptions. Had a significant difference been observed, it might have allowed for greater understanding of what issues or perceived needs were present at different grade levels.

Digital citizenship was viewed in a fairly consistent manner among teachers. Teachers' overall perceptions of digital citizenship were that it was important whether their school had a formal curriculum or not. Unfortunately, despite the resounding view that digital citizenship was important, teaching its tenets was not valued enough by teachers to include it in the curriculum, formally or informally. The teaching of digital security, digital law, digital commerce, and digital health and wellness was even stated as taking place relatively infrequently. One might think there would be differences in perceptions when teachers were separated by age, gender, or grade level; however, there was very little difference observed. The only significant difference occurred with gender in the areas of digital communication and digital etiquette. Even those differences, while significant, did not provide any further insight when taken with the study as a whole. The sum of the study was that teachers perceive digital citizenship as important, but tended to implement digital citizenship instruction infrequently.

Implications

Implications of this research focus primarily on the similar perceptions of teachers with regard to both digital citizenship and the teaching of digital citizenship in the classroom. The study was intentional in targeting teachers' opinions in that they are the ones actually in the classroom influencing students on a daily basis.

Clearly, teachers perceive digital citizenship as an important curricular objective; however, equally clear was the recognition that teachers were not actively addressing the core tenets of digital citizenship in their curriculum. The research confirmed the opinions of digital citizenship experts when they expressed that even though technology is deeply embedded in our lives, we rarely take the time or attention to address the concerns, both moral and practical, that technology births (Ohler, 2010, 2011; Ribble, 2011). High schools with one-to-one technology programs have invested large amounts of money providing students with a device, but few have provided a formal curriculum to help students use the device as good digital citizens. With the belief that teacher education programs need to be enhanced to include digital citizenship (Moll & Krug, 2008; Ribble, 2011), schools relying only on inherent teacher knowledge will likely end with sporadic digital citizenship instruction at best. A benefit derived from this study was the observation that teachers' digital citizenship perceptions and implementation were mainly consistent regardless of most factors outside of one small variation based on gender. This would imply that teachers' perceptions of digital citizenship are almost universal with little influence by external factors such as teacher preparation, age, or gender.

Teachers shared their view of digital citizenship and how it was taught in their classroom, showing they saw digital citizenship as important, but did not always teach it with intentionality in the classroom. Determining what teachers think about digital citizenship and what they do with it in the classroom allows greater understanding of the reality of digital citizenship in those classrooms.

Recommendations for Professionals

Students educated in high schools with a one-to-one technology program have been given the keys to a vast world of information. However, while there are tests and requirements to drive an actual car, some will hand over a tablet to a toddler with no content restrictions or filters. While there is great benefit in technology access, there are also dangers like off-task behavior, inappropriate socialization, inappropriate content, and fake media consumption if educators do not help guide students in appropriate use (Hinvest & Brosnan, 2012). In order to teach students to consume information through appropriate filters, such as knowing what to question and what to restrict, educators must take on the responsibility of teaching digital citizenship (Hollandsworth et al., 2011; Ribble, 2011). Teachers indicated a perception that digital citizenship is important and this feeling must translate into action in the classroom by teaching all tenets with planned intentionality.

School leaders should take the initiative to design and implement comprehensive digital citizenship programs such as those given by Ribble (2011). Providing education on morality concepts can improve moral reasoning (Bell & Liu, 2015). As students improve their moral reasoning and ethical media competency, they are less likely to engage in such negative behaviors as cyberbullying (Müller et al., 2014). Teachers' perceptions do not necessarily match up with their practice in the classroom. Dedicated time and focus by the school administration is necessary to improve the amount of time spent on digital citizenship instruction.

Recommendations for Future Research

The purpose of this study was to gain an overall view of teacher perceptions and the frequency of digital citizenship instruction in Missouri high schools with a one-to-one technology program. An obvious question is what results would come from this survey in elementary and middle school buildings. Hollandsworth et al. (2011) declared effective digital citizenship should take place in kindergarten and first grade while students are still forming so many ideas of how to use technology. With Disney, Connelly, and Waterhouse (2017) talking about some countries integrating educational technology in their preschools, research focused on teachers of preschoolers or younger children, such as the Parents as Teachers program, would help to address the timeliness of digital citizenship at very young ages.

Another idea for research would be a study examining those schools that indicated they have a formal digital citizenship curriculum and determining what that looks like in their school. Research comparing their incidents of discipline involving technology compared to those of one-to-one schools without a formal curriculum could provide data showing whether it has an actual impact on student behavior.

A demographic not examined was the various aspects of geography. A study could compare urban, suburban, and rural schools. Another option would be to look at data comparing the different regions of Missouri. Finally, a study that looked at schools outside of Missouri would continue to add to the body of knowledge and allow for comparisons with this research.

Finally, the only significant differences observed in this research were in the areas of digital communication and digital etiquette with different genders. It would be interesting to expand this research by focusing only on gender and having teachers rank the nine tenets of digital citizenship with regard to their importance. A question delving into the reasoning behind the rankings could reveal why these differences existed.

Summary

This study focused on the perception and implementation of digital citizenship of high school teachers in Missouri high schools with a one-to-one technology program. It focused on three research questions surrounding digital citizenship with a focus on teacher perceptions, the importance of elements of digital citizenship as measured by frequency of instruction, and potential differences in teacher perceptions based on age, gender, and primary grade level taught.

The conclusions drawn from the research displayed a consistent theme throughout. Overall, teachers perceived the tenets of digital citizenship as important, with digital rights and responsibilities and digital literacy marked as the most important. Unfortunately, most of the teachers in this study did not teach in a high school that had developed a formal curriculum for teaching digital citizenship. Whether because of this lack of formality or other factors, digital citizenship was taught in a mediocre fashion. There was no difference as to whether a student was in the ninth, 10th, 11th, or 12th grade; digital citizenship was addressed with roughly the same frequency in each. Additionally, whether a teacher was younger or older, male or female, or primarily taught different grade levels made little difference in teacher perceptions. The significant difference observed was between females and males, with females placing greater importance on digital communication and digital etiquette.

Teachers, regardless of demographics, responded in way that showed a definitive perception that digital citizenship was crucial, but not worthy of substantial instructional time. This dissonance between perception and implementation combined with many teachers' lack of formal curriculum led to the implication that digital citizenship's tenets should be prioritized and intentionally taught by teachers and their high schools.

The recommendation for professionals looking at this research continues this theme by espousing the idea that school leaders should develop and implement a formal digital citizenship curriculum. In doing so, they would promote a growth mindset in the area of digital citizenship in students and encourage its implementation in the classroom. The other professional recommendation focuses on the teachers and is the idea that a sense of urgency surrounding digital citizenship instruction must be embraced by teachers. Through this, they could help students think critically about the moral issues surrounding digital citizenship and make more thoughtful decisions regarding technology use.

The study prompted curiosity toward garnering further information to help provide a more complete picture of digital citizenship in education. The idea of surveying teachers of younger students all the way from middle school teachers down to preschool teachers would provide a more holistic picture of preK-12 education. To determine if a formal curriculum really did make a difference, focusing research on those schools with a formal curriculum would also provide interesting data. Expanding the research to take geography into account could look at both geographical location with regard to urban, suburban, and rural physical location as well as expand the research to include schools outside of the state of Missouri. The final recommendation for future research focused on the study's sole significant difference observed when looking at gender differences with regard to digital citizenship opinions. Further delving into gender differences regarding digital citizenship could provide interesting data for research focused mainly on this demographic variable.

In summary, the conclusion and implication of this study were that while the perception of teachers toward digital citizenship was positive, the corresponding action of teaching it was found to be casual. Because of this, recommendations for professionals revolved around formalizing curriculum and developing a greater sense of need to teach digital citizenship. Recommendations for future research focused on surveying teachers of younger students, examining schools with a formal curriculum, considering geography, and taking a closer look at gender differences among teachers.

Ultimately, this research discovered a disparity exists between teachers' perceptions and implementation of digital citizenship in the classroom. This must change whether through explicit curriculum or embedded teachings in the classroom. Ohler (2011) called on teachers to develop students' capacity in digital citizenship so they can use it well to improve not only the workforce but also local neighborhoods. He pointed out that educators have the ability to shape the beliefs and behavior of students who may turn out to be their future neighbors and even leaders. With that in mind, maybe more teachers would see a need to address digital citizenship more frequently.

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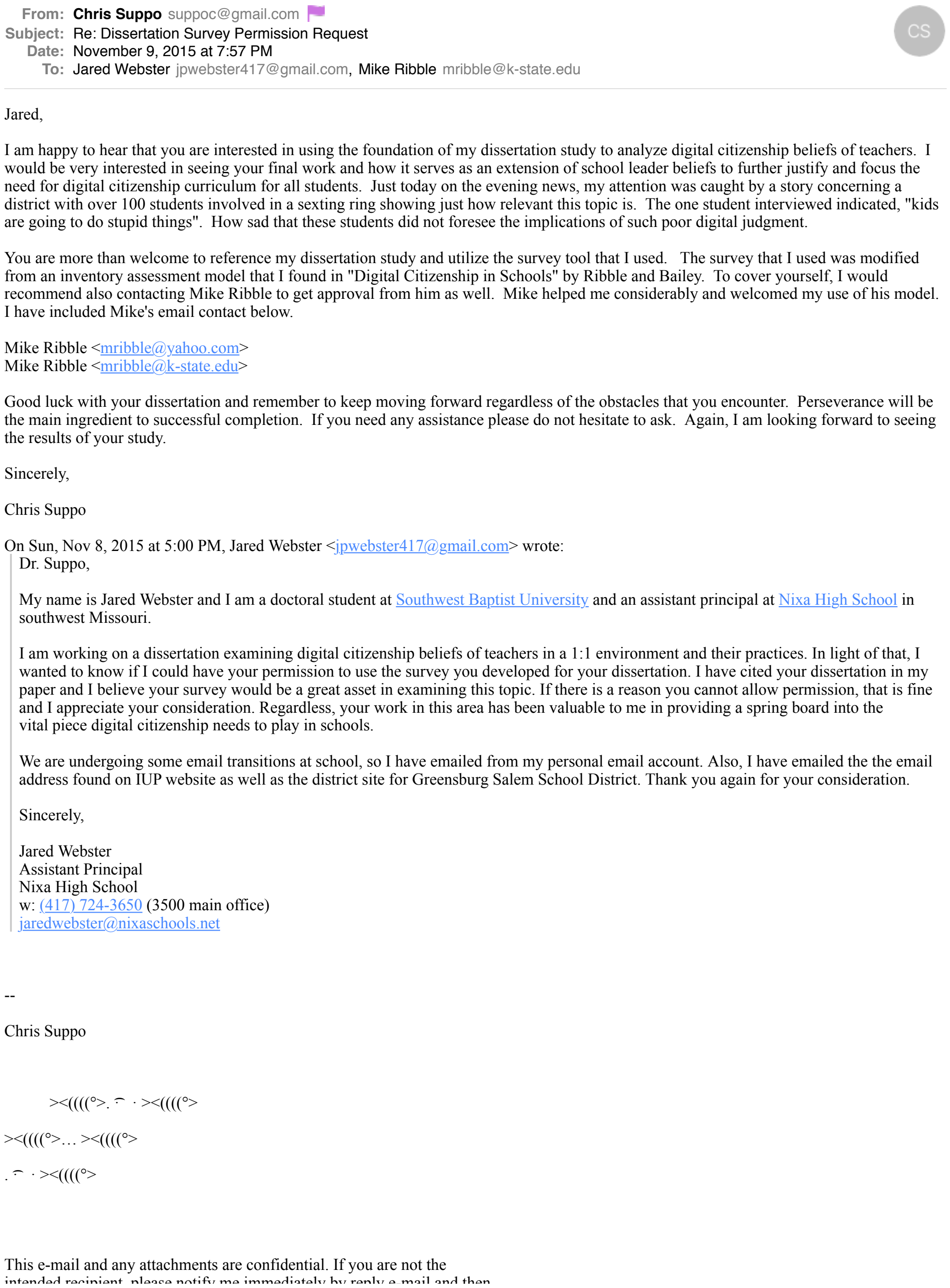
APPENDIX A

Permission to Use Survey



From: **Chris Suppo** suppoc@gmail.com
Subject: Re: Dissertation Survey Permission Request
Date: November 9, 2015 at 7:57 PM
To: Jared Webster jpwebster417@gmail.com, Mike Ribble mribble@k-state.edu

Jared,

I am happy to hear that you are interested in using the foundation of my dissertation study to analyze digital citizenship beliefs of teachers. I would be very interested in seeing your final work and how it serves as an extension of school leader beliefs to further justify and focus the need for digital citizenship curriculum for all students. Just today on the evening news, my attention was caught by a story concerning a district with over 100 students involved in a sexting ring showing just how relevant this topic is. The one student interviewed indicated, "kids are going to do stupid things". How sad that these students did not foresee the implications of such poor digital judgment.

You are more than welcome to reference my dissertation study and utilize the survey tool that I used. The survey that I used was modified from an inventory assessment model that I found in "Digital Citizenship in Schools" by Ribble and Bailey. To cover yourself, I would recommend also contacting Mike Ribble to get approval from him as well. Mike helped me considerably and welcomed my use of his model. I have included Mike's email contact below.

Mike Ribble <mribble@yahoo.com>
Mike Ribble <mribble@k-state.edu>

Good luck with your dissertation and remember to keep moving forward regardless of the obstacles that you encounter. Perseverance will be the main ingredient to successful completion. If you need any assistance please do not hesitate to ask. Again, I am looking forward to seeing the results of your study.

Sincerely,

Chris Suppo

On Sun, Nov 8, 2015 at 5:00 PM, Jared Webster <jpwebster417@gmail.com> wrote:

> Dr. Suppo,
>
> My name is Jared Webster and I am a doctoral student at Southwest Baptist University and an assistant principal at Nixa High School in southwest Missouri.
>
> I am working on a dissertation examining digital citizenship beliefs of teachers in a 1:1 environment and their practices. In light of that, I wanted to know if I could have your permission to use the survey you developed for your dissertation. I have cited your dissertation in my paper and I believe your survey would be a great asset in examining this topic. If there is a reason you cannot allow permission, that is fine and I appreciate your consideration. Regardless, your work in this area has been valuable to me in providing a spring board into the vital piece digital citizenship needs to play in schools.
>
> We are undergoing some email transitions at school, so I have emailed from my personal email account. Also, I have emailed the the email address found on IUP website as well as the district site for Greensburg Salem School District. Thank you again for your consideration.
>
> Sincerely,
>
> Jared Webster
> Assistant Principal
> Nixa High School
> w: (417) 724-3650 (3500 main office)
> jaredwebster@nixaschools.net

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Chris Suppo

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This e-mail and any attachments are confidential. If you are not the
intended recipient, please notify me immediately by reply e-mail and then

From: **Mike Ribble** mribble@yahoo.com
Subject: Re: Survey Request
Date: November 10, 2015 at 3:08 PM
To: Jared Webster jpwebster417@gmail.com

Jared,

Thank you for contacting me. I am excited that you have interest in this area of Digital Citizenship. You certainly follow in some good footsteps as Dr. Suppo has helped to grow the information related to this topic. Yes, you do have my permission to use the survey or other materials in my books to help along with your research. I do look forward to seeing your results once you get to that phase.

You are certainly fortunate to be researching this topic today. The number of resources have grown substantially in the past 3-5 years. I am sure that you have some across some of these materials that are out there related to Digital Citizenship today but just thought that I would add them (in case there were some you had not). One of the people that I work with frequently is Dr. Jason Ohler (http://jasonohler.wix.com/final#!home/mainPage). He has been working in this area for many years. His book *Digital Community, Digital Citizen* is one of the books that I frequently share with others that are looking for resources. Another person is Dr. Marialice Curran who has been working to share the Digital Citizenship idea with her Twitter chat #digcit (which is now every Wed. at 7 p.m. Eastern US time zone). She just hosted the first Digital Citizenship Summit this past Oct. in Hartford Connecticut (http://digcitsummit.com/). There will be many resources shared at this conference and many ways to connect to them. Another person is Marty Park that has been working on a project called iDriveDigital, Digital Driver's license for students (https://otis.coe.uky.edu/DDL/launch.php). They are currently working on version 2.0. As for me I have the third edition of my book *Digital Citizenship in Schools*was released this past Sept. I am very excited by this version and have sections by the folks mentioned above including a district in Canada and how they implemented Digital Citizenship in to their school and beyond. I also have worked with ISTE to create a Digital Citizenship Academy to focus on the ISTE Standards related to Digital Citizenship (https://www.iste.org/resources/product?id=3197&name=Digital+Citizenship+Academy+Series). This series discusses not just Digital Citizenship in the classroom but how it is part of the larger community. If you are a member of ISTE we also not have a Professional Learning Community focused on Digital Citizenship.

If you would like me to place you in contact with any of these or other people doing work in this field please do not hesitate to ask. Have a wonderful day and good luck on your program.

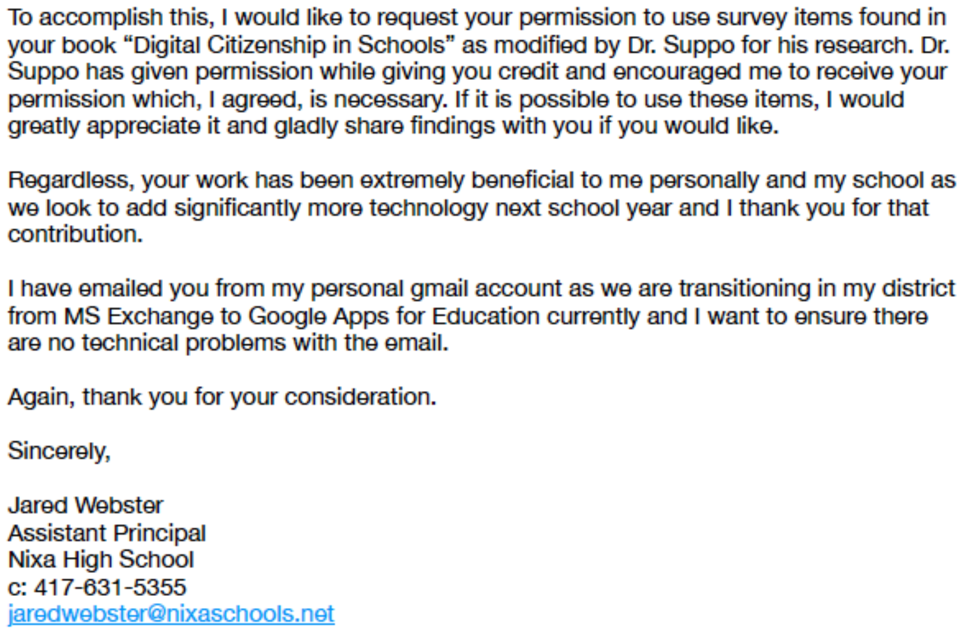
Mike

Dr. Mike Ribble, Ed.D.
http://www.digitalcitizenship.net
Twitter - @digcitizen
mribble@yahoo.com

On Tuesday, November 10, 2015 9:26 AM, Jared Webster <jpwebster417@gmail.com> wrote:

Dr. Ribble,

I am an assistant principal at Nixa High School and a doctoral student at Southwest Baptist University both in southwest Missouri. For my dissertation, I am looking to continue the research of Dr. Chris Suppo and survey teachers in regard to beliefs and practices in 1:1 schools in Missouri related to digital citizenship.



To accomplish this, I would like to request your permission to use survey items found in your book “Digital Citizenship in Schools” as modified by Dr. Suppo for his research. Dr. Suppo has given permission while giving you credit and encouraged me to receive your permission which, I agreed, is necessary. If it is possible to use these items, I would greatly appreciate it and gladly share findings with you if you would like.

Regardless, your work has been extremely beneficial to me personally and my school as we look to add significantly more technology next school year and I thank you for that contribution.

I have emailed you from my personal gmail account as we are transitioning in my district from MS Exchange to Google Apps for Education currently and I want to ensure there are no technical problems with the email.

Again, thank you for your consideration.

Sincerely,

Jared Webster
Assistant Principal
Nixa High School
c: 417-631-5355
jaredwebster@nixaschools.net

APPENDIX B

Original Digital Citizenship Survey by Dr. Chris Suppo

Headings A through I did not appear to the subjects. Individual items within headings A through I were randomized using the first question from each category first then the second and so forth. Headings were not used and questions within this section were randomized to provide greater reliability of responses.

Questions 1 through 36 utilized a 6 foil Likert Scale
  Very Important
  Important
  Somewhat Important
  Somewhat Unimportant
  Unimportant
  Very Unimportant

In questions 1 through 36, please rate how important or unimportant you feel it is to educate students and develop awareness about these various aspects or issues of Digital Citizenship?

A - Digital Etiquette:
  Q1. Attempting to multi-task using technology while in a social situation with others
  Q10. Using e-mail, websites, instant messaging, or text messaging to intimidate others (cyberbullying)
  Q19. Using technology when it is contextually appropriate
  Q28. Disrupting others by leaving a cell phone on ringer mode in an inappropriate setting

B - Digital Communication:
  Q2. Communicating using technology to circumvent rules or socially acceptable behavior
  Q11. Appropriate and inappropriate use of Instant Messaging (IM) and Texting shorthand
  Q20. Using a social networking site to share private and personal information
  Q29. Creating online content using Web 2.0 tools to communicate and share information with others

C - Digital Literacy:
  Q3. Using online search methods for maximizing results with greater efficiency
  Q12. Evaluating online resources for accuracy and authenticity
  Q21. Learning to use basic digital technology tools inherent within many aspects of our society (browsers, search engines, downloading

information, e-mail, etc.)
Q30. Creating, collecting and organizing digital information that can be archived and easily found for later use

D - Digital Access:
Q4. Opportunities for student access to technology for completing assignments, projects and research
Q13. Online learning as an alternative or addition to traditional educational practices
Q22. Recognizing that everyone may not have equal access to the Internet or other technology resources
Q31. Addressing Web content that is created to provide accessibility to the disabled

E - Digital Commerce:
Q5. Using online services for purchasing goods
Q14. Methods for identity protection when purchasing goods online
Q23. Online fraud, phishing, and scams
Q32. Evaluating multiple purchasing sites to ensure wise consumerism

F - Digital Rights and Responsibilities:
Q6. Plagiarizing information obtained from the Internet.
Q15. Citing sources and obtaining permission to use online material created by others.
Q24. Reporting cyberbullies, threats, and other inappropriate technology use.
Q33. Awareness and understanding of Acceptable Use Policies.

G - Digital Law:
Q7. Downloading music files illegally from the Internet or ripping (illegally recording and making copies) of movie DVD's
Q16. Creating content that incorporates copyright material obtained over the Internet
Q25. Intellectual property rights
Q34. Knowledge of driving and texting laws

H - Digital Health and Wellness:
Q8. Ergonomic and health issues related to the use of various technologies
Q17. Physical risks associated with poorly designed digital devices or work spaces
Q26. Spending an inordinate amount of time using a computer or other digital device
Q35. Texting while operating machinery or a vehicle

I - Digital Security:
Q9. Sending an e-mail containing sensitive information
Q18. Posting private information that may be accessed by others

Q27. Understanding data protection measures like: anti-virus software, firewalls, surge protection, data backup
Q36. Protecting created work to minimize the risk that others will steal it

Questions 37 through 54 utilized a 6 foil Likert Scale
Strongly Agree
Agree
Somewhat Agree
Somewhat Disagree
Disagree
Strongly Disagree

In questions 37 through 54, please rate how strongly you agree or disagree that these issues must be addressed within any school's policies, practices and procedures?

Q37. Stealing school property
Q38. Vandalizing school property
Q39. Using drugs or alcohol on campus
Q40. Skipping classes
Q41. Bringing weapons to school
Q42. Bullying or hazing
Q43. Treating school personnel with respect
Q44. Cheating on assignments or tests
Q45. Fighting on school property
Q46. Hacking into a school's computer system
Q47. Using instant messaging during class and/or school
Q48. Playing non-educational games during school
Q49. Using cellular phones during school
Q50. Accessing pornographic Websites on campus
Q51. Failing to use technology effectively and constructively
Q52. Using digital technology to intimidate or threaten others
Q53. Illegally downloading music and other copyright material from the Internet
Q54. Plagiarizing content or information obtained online

Question 55: (multiple choice answer)

Q55. How is Digital Citizenship addressed within your school district?

A. Not at all
B. Somewhat infrequently
C. Digital Citizenship skills are addressed across the curriculum in most subjects but without a formally written digital citizenship curriculum
D. Digital Citizenship skills are addressed across the curriculum in most subjects with a formally written digital citizenship

curriculum
E. Digital Citizenship skills are addressed within a technology specific course that all students must take

Question 56: (Logic: only If answered A to question 55)

Q56. Do you feel Digital Citizenship needs to be addressed within your school district?

A. Yes
B. No

Questions 57 and 58: (Logic: only If “answered B, C, D, or E to question 55)

Questions 57 and 58 utilized a 6 foil Likert Scale
Very Frequently
Frequently
Somewhat Frequently
Somewhat Infrequently
Infrequently
Very Infrequently

Q57. How frequently or infrequently do you feel the elements of Digital Citizenship are addressed within your district?

A. Digital Access – the full electronic participation in society
B. Digital Commerce – the buying and selling of goods online
C. Digital Communications – the exchange of information
D. Digital Literacy – the capacity to use digital technology and knowing when and how to use it
E. Digital Etiquette – the standards of conduct expected by other digital technology users
F. Digital Law – the legal rights and restrictions governing technology use
G. Digital Rights & Responsibilities – the privileges and freedoms extended to all digital technology users, and the behavioral expectations that come with them
H. Digital Health and Wellness – the elements of physical and psychological well-being related to technology use
I. Digital Security – the precautions that all technology users must take to guarantee their personal safety and security of their network

Q58. How frequently or infrequently do you feel Digital Citizenship is taught and/or addressed within your school curriculum?

A. Elementary School(s)

B. Middle School(s)
C. High School(s)

Demographic Information:

Q59. District position of the respondent (choose the position that most closely aligns to your position duties)

A. Superintendent
B. Curriculum Coordinator
C. Technology Coordinator

Q60. Please select your age range

A. 22 – 30 years old
B. 31 – 40 years old
C. 41 – 50 years old
D. 51 – 60 years old
E. 61 years old or greater

Q61. What is your gender?

A. Male
B. Female

Q62. District Type:

A. Rural
B. Urban
C. Suburban

APPENDIX C

Consent Letter from Dr. Kathy Tackett

From: Kathy Tackett
To: Jared Webster
Subject: RE: Permission to use dissertation participants
Date: Friday, March 6, 2015 4:39:57 PM
Attachments: AVG certification.txt

Hi Jared—

I would be happy to let you have my information but just remember that it is now a little over a year old and I know there are some schools that have added a one to one component. The list is at home so I'll try to send that to you this evening.

Good luck with your dissertation. If you stick with it, you will finish! Please tell Dr. Truelove hello for me. He is an awesome advisor and I was blessed to have him. I'm not sure I would be done right now without him.

Kathy

From: Jared Webster [mailto:jaredwebster@nixaschools.net]
Sent: Thursday, March 05, 2015 4:59 PM
To: Kathy Tackett
Subject: Permission to use dissertation participants

Dr. Tackett,

My name is Jared Webster and I am enrolled in the doctoral program at SBU. I am researching digital citizenship education and was given your name and study by Dr. Truelove as a possible help in completing my dissertation.

I was wondering if I could have permission to obtain and use the list of schools you identified as 1:1 based on your definition for the purpose of my research, please? In looking for a delimiting factor for participants, I believe this would be a good group to survey as digital citizenship is very pertinent to the schools and districts you have identified. I would cite everything appropriately and give you due credit for your work.

Thank you for your consideration and I look forward to hearing from you!

Sincerely,

Jared Webster
Assistant Principal
Nixa High School
(417) 413-1835

APPENDIX D

Digital Citizenship Survey

Headings A through I did not appear to the subjects. Individual items within Headings A through I were randomized using the first question from each category first then the second and so forth. Headings were not used and questions within this section were randomized to provide greater reliability of responses.

Questions 1 through 36 utilized a 6-foil Likert Scale
- Very Important
- Important
- Somewhat Important
- Somewhat Unimportant
- Unimportant
- Very Unimportant

In Questions 1-36, please rate how important or unimportant you feel it is to educate students and develop awareness about these various aspects or issues of digital citizenship.

A. - Digital Etiquette:
- Q1. Attempting to multi-task using technology while in a social situation with others
- Q10. Using e-mail, Websites, instant messaging, or text messaging to intimidate others (cyberbullying)
- Q19. Using technology when it is contextually appropriate
- Q28. Disrupting others by leaving a cell phone on ringer mode in an inappropriate setting

B. - Digital Communication:
- Q2. Communicating using technology to circumvent rules or socially acceptable behavior
- Q11. Appropriate and inappropriate use of Instant Messaging (IM) and texting shorthand
- Q20. Using a social networking site to share private and personal information
- Q29. Creating online content using Web 2.0 tools to communicate and share information with others

C. - Digital Literacy:
- Q3. Using online search methods for maximizing results with greater efficiency
- Q12. Evaluating online resources for accuracy and authenticity
- Q21. Learning to use basic digital technology tools inherent within many aspects of our society (browsers, search engines, downloading information, e-mail, etc.)

Q30. Creating, collecting, and organizing digital information that can be archived and easily found for later use

D. - Digital Access:
Q4. Opportunities for student access to technology for completing assignments, projects, and research
Q13. Online learning as an alternative or addition to traditional educational practices
Q22. Recognizing that everyone may not have equal access to the Internet or other technology resources
Q31. Addressing Web content that is created to provide accessibility to the disabled

E. - Digital Commerce:
Q5. Using online services for purchasing goods
Q14. Methods for identity protection when purchasing goods online
Q23. Online fraud, phishing, and scams
Q32. Evaluating multiple purchasing sites to ensure wise consumerism

F. - Digital Rights and Responsibilities:
Q6. Plagiarizing information obtained from the Internet
Q15. Citing sources and obtaining permission to use online material created by others.
Q24. Reporting cyberbullies, threats, and other inappropriate technology use.
Q33. Awareness and understanding of Acceptable Use Policies.

G. - Digital Law:
Q7. Downloading music files illegally from the Internet or ripping (illegally recording and making copies) of movie DVDs
Q16. Creating content that incorporates copyright material obtained over the Internet
Q25. Intellectual property rights
Q34. Knowledge of driving and texting laws

H. - Digital Health and Wellness:
Q8. Ergonomic and health issues related to the use of various technologies
Q17. Physical risks associated with poorly designed digital devices or work spaces
Q26. Spending an inordinate amount of time using a computer or other digital device
Q35. Texting while operating machinery or a vehicle

I. - Digital Security:
Q9. Sending an e-mail containing sensitive information
Q18. Posting private information that may be accessed by others
Q27. Understanding data protection measures like: antivirus software,

firewalls, surge protection, data backup
Q36. Protecting created work to minimize the risk that others will steal it

Question 37: (multiple choice answer)

37. How is digital citizenship addressed within your school?

A. Not at all
B. Somewhat infrequently
C. Digital citizenship skills are addressed across the curriculum in most subjects but without a formally written digital citizenship curriculum
D. Digital citizenship skills are addressed across the curriculum in most subjects with a formally written digital citizenship curriculum
E. Digital citizenship skills are addressed within a technology specific course that all students must take

Question 38: (Logic: only If answered A to Question 37)

Q38. Do you feel digital citizenship needs to be addressed with your school?

A. Yes
B. No

Questions 39 and 40: (Logic: only If "answered B, C, D, or E to Question 37)

Questions 39 and 40 utilized a 6-foil Likert Scale
Very Frequently
Frequently
Somewhat Frequently
Somewhat Infrequently
Infrequently
Very Infrequently

Q39. How frequently or infrequently do you feel the elements of digital citizenship are addressed within your school?

A. Digital Access – the full electronic participation in society
B. Digital Commerce – the buying and selling of goods online
C. Digital Communications – the exchange of information
D. Digital Literacy – the capacity to use digital technology and knowing when and how to use it
E. Digital Etiquette – the standards of conduct expected by other digital technology users
F. Digital Law – the legal rights and restrictions governing

technology use
G. Digital Rights & Responsibilities – the privileges and freedoms extended to all digital technology users, and the behavioral expectations that come with them
H. Digital Health and Wellness – the elements of physical and psychological well-being related to technology use
I. Digital Security – the precautions that all technology users must take to guarantee their personal safety and security of their network

Q40. How frequently or infrequently do you feel digital citizenship is taught and/or addressed within your school curriculum in the following grade levels?

A. 9th Grade
B. 10th Grade
C. 11th Grade
D. 12th Grade

Demographic Information:

Q41. Primary Grade Level(s) taught:

A. 9th Grade
B. 10th Grade
C. 11th Grade
D. 12th Grade

Q42. Please select your age range

A. 20 - 29 years old
B. 30 - 39 years old
C. 40 - 49 years old
D. 50 - 59 years old
E. 60 years old or greater

Q43. What is your gender?

A. Male
B. Female

APPENDIX E

Consent Email to Principals

Dear Colleague:

My name is Jared Webster and I am an assistant principal at Nixa High School in Nixa, MO. As a doctoral student at Southwest Baptist University, I am conducting research to determine teacher beliefs regarding digital citizenship and the implementation of digital citizenship. With this information, high schools will be better able to determine what areas of digital citizenship to focus on as they learn from teachers who have experienced a technologically rich environment.

I am surveying all high school teachers in buildings with a one-to-one technology program in Missouri. In order to accomplish this task, I must first identify schools who meet the criteria as having an existing one-to-one technology program in the 2016-2017 school year. Please answer the survey at the link below to identify if your high school can be designated as such. This survey should take less than one minute.

If your school would identify as having a one-to-one technology program in the 2016-2017 school year, I would ask that you forward the attached document to teachers in your building to participate in the survey and indicating your consent for your building to participate in the study. The attached document contains the informed consent agreement. Your participation and that of the teachers in your high school is greatly appreciated!

One to one determination survey - Principal Survey Link (http://www.questionpro.com/t/ANLaTZajzx)

Teacher Consent Document and Survey (http://bit.ly/DigCitSurvey)

Sincerely,

Jared Webster
Principal
Nixa Junior High School

APPENDIX F

Consent E-mail to Teachers

Dear Colleague:

My name is Jared Webster and I am a principal at Nixa Junior High School in Nixa, MO. As a doctoral student at Southwest Baptist University, I am conducting research to determine teacher beliefs regarding digital citizenship and the implementation of digital citizenship. I am surveying all high school teachers in buildings with a one-to-one technology environment in Missouri. I would like to ask for your participation in this study. I realize you are busy and your participation in this study should take no more than 10 minutes of your time to complete. The survey is completely anonymous.

Your privacy is important; your answers will be combined with other participants and reported in aggregate form. Information reported will not indicate individual participants or school districts. There is no penalty should you choose not to participate or answer all of the questions. Your completion and submission of the survey will indicate your consent to participate and permission to use the information that you have provided in my study.

Before you make a final decision about participation, please read the following statements about how your response will be used and how your rights as a participant will be protected:

- Participation in the study is completely voluntary. You may stop participating at any point without penalty.
- You need not answer all of the questions.
- Your answers will be kept confidential. Results will be presented to others in summary form only, without names or other identifying information.
- Your participation will take approximately 5 - 10 minutes. You will answer questions about digital citizenship beliefs and how often digital citizenship concepts are addressed in your school.

This project has been reviewed and approved by the RRB Committee at Southwest Baptist University (326-1659). The committee believes that the research procedures adequately safeguard the subject's privacy, welfare, civil liberties and rights.

You may contact me at 417-413-1835 if you have questions or concerns about your participation. If you would like a copy of the results of this study, you may email me at jaredwebster@nixaschools.net. **Please click on the link below to take the survey.** Thank you for your time and consideration.

http://www.questionpro.com/t/ANLaTZYr6r

Sincerely,

Jared Webster
Principal
Nixa Junior High School
(417) 413-1835